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See pages 34  
and 35 for details.



Cover photos (main image): **A montage of two images to mark the 100th anniversary of the RAF. BBMF Spitfire Mk IIa P7350, a Battle of Britain survivor, is painted in the markings of Spitfire Mk 1a N3162 of 41 Sqn, coded 'EB-G'. Darren Harbar Photography. The Typhoon FGR4 is from 1 Sqn. Jamie Hunter. Inset (top right): An American Airlines McDonnell Douglas DC-10-10. Gerry Manning. Inset (bottom left): The first Boeing 787-9 Dreamliner for Qantas. Bernard Proctor.**

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# Emirates Receives 100th A380



Emirates has taken delivery of its 100th A380. Top officials from Airbus and the carrier celebrated the occasion on November 3 in Hamburg. The airline has 42 more A380s on order.

A much-discussed announcement of further purchases of the type at the Dubai Airshow in November didn't materialise.

However, Boeing was able to

**Celebrations in Hamburg to mark the delivery of the 100th A380 to Emirates.** Airbus

announce at the show on November 12 that Emirates was buying 40 Boeing 787-10 Dreamliners. The deal, including associated equipment, is valued at \$15.1bn at current list prices and gives the operator the opportunity to switch to the smaller 787-9.

The airline's 787s will be delivered in a mix of two- and three-class configurations, seating between 240 and 330 passengers. Engine options are being evaluated.

The Dubai-based carrier cancelled an order for the Dreamliner's rival, the Airbus A350, in 2014, having originally committed to 50 A350-900s and 20 -1000s. It backed out after conducting a review.

## IAG Seals Monarch Slots Deal at Gatwick

Take-off and landing slots left vacant at London's Gatwick Airport by the Monarch Airlines collapse are being acquired by IAG, owner of British Airways. Monarch Airlines ceased trading with debts of around £466m on October 2, 2017.

In early November the High Court ruled that ACL Airport Coordination

Limited (ACL) could reallocate the slots. However, a week later the Court of Appeal backed the airline administrator KPMG's contention that Monarch Airlines was still an "air transport undertaking", holding an "operating licence".

The victory paved the way for KPMG to organise a series of 'slot swaps'. IAG

at Gatwick Airport and Wizz Air at London Luton Airport, took up the rights in return for cash to help pay Monarch Airlines' creditors. Slots at Birmingham had already been re-allocated, while KPMG did not contest the return of those at Manchester to the 'pool' for take-up by existing or new carriers.

## BBMF Spitfire in New Colours



Spitfire IX MK356 wearing its new scheme at Biggin Hill. Robin J Brooks

RAF Battle of Britain Memorial Flight's Supermarine Spitfire LF.IXe, MK356, is back home at RAF Coningsby, Lincolnshire after an overhaul by The Spitfire Company at Biggin Hill.

It has also been painted in a new colour scheme, representing 92 Sqn's EN152 and the code it wore, which operated in Tunisia during April and May 1943. Flt Lt (later Sqn Ldr) Neville Duke was among the pilots to fly this aircraft.

He went on to become the highest-scoring Allied fighter ace of the Mediterranean theatre, with 27 confirmed victories.

The Spitfire was returned to its base on November 8 in the hands of Flt Lt Andy Preece.



# More Boeing 747s Retire

Boeing 747 services ended at United Airlines on November 7. The airline recreated the first 747 flight it operated in 1970, flying between San Francisco and Honolulu. United put on a 1970s-inspired menu and in-flight entertainment, while the crew wore retro uniforms. Aircraft N118UA operated the last flight and also a special round trip for employees from Washington Dulles International Airport on October 19. For the farewell this 747 received extra '747 Friend Ship' titles.

Another airline is taking the type out of service. Delta Air Lines was due to end scheduled Boeing 747-400



United gave the Boeing 747 a suitable farewell on its final service for the carrier. Cary Liao

operations on December 17 when flight DL154 from Seoul/Incheon touches down in Detroit. The SkyTeam carrier

intends to keep the type in service until December 31, flying sports teams and ad-hoc charters.

## HAF 339 Mira Disbands



The Hellenic Air Force (HAF) has disbanded 339 'Aias' Mira. An official ceremony took

place on October 31 at Andravida air base in southwestern Greece. No.339 was one

Prior to the disbandment, F-4E AUP serial 71744 was painted with different artwork on each side of the tail highlighting 65 years of operations by 339 Mira. This Phantom is due for an overhaul and is expected to return to operational service with 338 Mira. Paul van den Hurk and Hans Looijmans

of the two locally based F-4E AUP Phantom II squadrons belonging to the 117 Combat Wing.

The standing down of the unit also marked the expansion of its sister unit. Personnel and aircraft of 339 Mira merged with 338 'Ares' Mira on the same day. The unit will have about 25 operational Phantoms. There are currently no plans to reduce the number of active F-4Es in service.

## Massive A320neo Order

Indigo Partners' four portfolio airlines signed a memorandum of understanding (MOU) on November 15 with Airbus for 430 additional A320neo Family aircraft. The jets will be split between the US's Frontier Airlines, JetSMART (Chile), Volaris (Mexico) and Wizz Air (Hungary) upon completion of the final purchase agreement. It will lead to further expansion of the carriers. The commitment, comprising 273 A320neos and 157 A321neos, is valued at \$49.5bn at list prices.

Indigo Partners is a private equity fund based in Phoenix, Arizona, specialising in investments in air transportation.

A breakdown of the aircraft allocations is within the civil orders table, see page 14.

## Airlander Breaks Free

The Airlander airship broke free from its mooring at Cardington airfield, Bedfordshire, on November 18. The aircraft was not flying at the time of the incident.

The manufacturer, Hybrid Air Vehicles, said in a statement: "We are testing a brand new type of aircraft and incidents of this nature can occur during this phase of development. We will assess the cause of the incident and the extent of repairs needed to the aircraft in the next few weeks."

An automatic safety system operated, which is designed to rip open the hull and deflate the aircraft if it breaks free from its mast.

The previous day, the Airlander had completed its sixth test flight.

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## Hawkeye in Successful Refuelling Test

The first aerial refuelling between an E-2D and a KC-130T took place over the Chesapeake Bay near NAS Patuxent River, Maryland, on July 14. Over the course of the four-hour flight, the E-2D connected with the KC-130T 12 times, including ten 'dry plugs'.

A total of 1,700lb (771kg) of fuel was transferred to the Advanced Hawkeye during two wet contacts. The aerial

**A flight crew from Northrop Grumman and Air Test and Evaluation Squadron VX-20 conducting the first aerial refuelling between a Hawkeye and a KC-130T.** US Navy/Liz Wolter

refuelling capability will allow the E-2D to fly missions lasting more than seven hours. Development of the capability began in 2013 and Northrop Grumman is under contract to modify three E-2Ds – two aircraft are already flying.

The first modified E-2D made its first flight

on December 15, 2016, at the contractor's St Augustine, Florida, facility. Beginning next year (2018), all new E-2Ds will be configured for aerial refuelling. The first operational squadron capable of extended mission durations is expected to be ready to deploy in 2020.

## Lightning II Landmarks

More milestones have been passed by the Lockheed Martin F-35 Lightning II. The first of the type to be assembled in Japan, by Mitsubishi Heavy Industries at the Komaki South Final Assembly and Check Out (FACO) facility, arrived at Misawa AB, Japan, on November 2.

The Japan Air Self-Defense Force-owned Lightning II, which was flown by a US Air Force pilot assigned to the Defense Contract Management Agency (DCMA),

was en route to US where it will undergo final functional tests.

Also, in Japan, the USMC's VMFA-121's complement of F-35Bs was completed on November 15 when the final group of four Lightning IIs arrived at MCAS Iwakuni. The arrival increased the 'Green Knights' primary aircraft inventory (PAI) to 16 F-35Bs.

The initial three operational F-35As for the Royal Norwegian Air Force arrived at Ørland Main Air Station on November 3 at the end of

a ferry flight that began at Lockheed Martin's production facility, adjacent to NAS Fort Worth Joint Reserve Base, Texas. Norway has taken delivery of 10 F-35s and seven of the Lightning IIs are supporting Norwegian training at Luke AFB, Arizona.

The first Italian-built F-35B conducted its maiden flight in Cameri on October 25. The aircraft, serial number MM7451 (c/n BL-1), was rolled out of the Cameri FACO facility in May. **Tom Kaminski**

## Strike Eagle Honours 4th FW



**A 4th Fighter Wing F-15E Strike Eagle in a heritage paint scheme sits on the flightline at Seymour Johnson AFB, North Carolina, on November 8. Members of the 4th Equipment Maintenance Squadron fabrication flight worked for more than a month to complete the work in honour of the wing's 75th anniversary.** USAF/Airman 1st Class Miranda A Loera

## Northrop Out of MQ-25 Race

Northrop Grumman withdrew from the US Navy's MQ-25 competition on October 25. The move surprised observers because the contractor had extensive experience on the project and the earlier Unmanned Carrier-Launched Airborne Surveillance and Strike (UCLASS) initiative that saw an unmanned aircraft operate from a US Navy aircraft carrier for the first time. The company's decision followed its assessment of the navy's final request for proposal (RFP) and its decision that responding to the request was not in the company's interest.

The service expects to select a competition winner and release a contract for full-scale development in 2018.



## Stratofortress 'Game Changer'

The USAF sent a new conventional rotary launcher (CRL) for the B-52H to a combat arena on November 6. This will enable the bomber to carry a selection of conventional smart weapons or GPS-guided munitions internally. Master Sgt Adam Levandowski, Air Forces Strategic Armament Systems manager, said: "Before these launchers, the B-52 was not capable of carrying smart weapons internally. Now each CRL allows for internal carriage which adds an additional eight smart bombs per aircraft. He stated: "It's a big game changer for current and future warfare."

Plus, he added: "Now, combatant commanders are presented with a much more flexible weapons selection without the need to request additional air support."

Although rotary launchers are used on present airframes, this is the first of its kind.

## Final Pax River Prowler Retired



**Touchdown for the last time – VX-23's EA-6B lands at NAS Patuxent River in heavy rain at the culmination of its final flight.** US Navy/Liz Wolter

The VX-23 Air Test and Evaluation Squadron retired its last EA-6B Prowler airborne electric attack aircraft at NAS Patuxent River, Maryland, on August 29.

Known as 'Salty Dog 536', the Prowler had been assigned to the squadron since 2004. It is now on display at the Patuxent

River Naval Air Museum in Lexington Park.

The EA-6B was the 56th of 170 Prowlers produced by Grumman Aerospace for the US Navy and Marine Corps. Prowlers remain operational with two Marine Corps squadrons at MCAS Cherry Point, North Carolina.

## US Army AH-64Es Arrive in Europe

The US Army's 1st Air Cavalry Brigade (ACB) arrived in Germany during November, marking an inaugural deployment of the AH-64E in Europe. Operated by the 1st Battalion, 227th Aviation Regiment, the 24 Apache Guardians will primarily be stationed

at Illesheim Army Air Field, Germany.

Normally stationed at Fort Hood, Texas, the brigade will spend nine months supporting Operation Atlantic Resolve. It formally relieved the 10th Mountain Division's combat aviation brigade on November 7,

allowing it to return to Fort Drum, New York.

The 1st ACB, complement of 12 CH-47Fs, 38 UH-60Ms, 15 HH-60Ms and the AH-64Es arrived in Belgium in October and the bulk of the aircraft later flew to Illesheim or to Katterbach Army Airfield.

## C295W Delivered to Saudi Arabia



**A Saudi Arabian Airbus C-295W ASW variant on approach to Malta from Seville on November 7 for a fuel stop while on delivery to the Middle East nation's Ministry of the Interior. Its future serial will be MOI-C2. This was the second example (out of four ordered), following a first C-295W that was delivered towards the end of 2015.** Alistair Zammit

## New Canadian Fighter Plan

Competition for a future Canadian fighter jet will begin in 2019 with plans to award a contract by 2021 or sooner. The Royal Canadian Air Force will seek 88 fighters to replace its current inventory of 76 CF-188 Hornets, which are approaching the end of their useful lives. Although Canada is an international participant in the Joint Strike Fighter programme, it has yet to make a commitment to purchase the aircraft and the government plans an open competition.

The Lockheed Martin F-35A, Eurofighter Typhoon, Dassault Rafale, Boeing F/A-18E/F and Saab Gripen E are all likely to respond to the Canadian request.

As a stopgap, Canada is attempting to purchase used F/A-18A/Bs from Australia or Kuwait. Earlier plans to purchase 18 Super Hornets have been placed on hold due to an ongoing trade tariff dispute between Boeing and Bombardier. **Tom Kaminski**

## First MQ-4Cs at Ventura

Two Tritons – the Northrop Grumman MQ-4Cs Unmanned Air System (UAS), – should be stationed at Naval Base Ventura County, Point Mugu, California, by the end of the year. They are the US Navy's first operational Tritons.

The aircraft will be tested before deployment to Andersen AFB, Guam in 2018.

The navy plans to acquire 68 Tritons and will initially operate the unmanned aircraft from Naval Station Mayport, Florida and NAS Sigonella, Italy, as well as Guam.

## 'Nuclear' 737 Spotted



The National Nuclear Security Administration's 737-4YO(C) N990ST at Albuquerque, New Mexico, on November 6. The aircraft, rarely spotted, has a livery similar to the one used by the US Navy for its C-40s. Originally delivered to Asiana Airlines, N990ST later saw service with Turkish Airlines and Adam Air. Joe G Walker

## IN BRIEF

The Australian Helicopter Aircrew Training System (HATS) project has received its final AIRBUS HELICOPTERS EC135T2+ training helicopter.

The Royal Australian Air Force sent a C-27J SPARTAN to New Zealand for participation in Exercise Southern Katipo 2017 on October 18. The milestone marked the first deployment for the battlefield airlifter since it entered service.

Britain will commit four RAF TYPHOONS to the Southern Air Policing mission in Romania next summer. Following a successful rotation in 2017, the fast jets will redeploy to the country to help police the Black Sea skies.

## Raptors Attack Taliban

A new US offensive in Afghanistan, which began on November 19, is being supported by F-22A Raptors from the 95th Expeditionary Fighter Squadron. They are operating from Al Dhafra AB, United Arab Emirates.

Following an Increment 3.1 upgrade, the F-22s have reportedly employed GBU-39

Small Diameter Bombs (SDBs) against the Taliban. The Raptor now has enhanced air-to-ground mission capability including geo-location of selected emitters, electronic attack, air-to-ground synthetic aperture radar mapping and designation of surface targets, and the GBU-39.

One Raptor squadron has been

permanently deployed to the Central Command (CENTCOM) region in recent years and has played a regular role in pre-planned strikes in both Iraq and Syria. This marked the first time the type has been pressed into action in Afghanistan, amid an increase in combat air power activity against the Taliban.

## Final Coast Guard Spartan Emerges

The US Coast Guard received the service's 14th and final C-27J at Davis-Monthan AFB, Arizona, on October 19. Tail number 2705 had been in storage with the 309th Aerospace Maintenance and Regeneration Group since August 2013.

Originally assigned the USAF serial number 08-27014, the Spartan was the last of 13 C-27Js to be re-generated from storage.

The Coast Guard HC-27J Asset Project Office (APO) took custody of the aircraft which had previously been assigned to the Ohio Air National Guard's 179th Airlift Wing.

The C-27J was flown to the Coast Guard Aviation Training Center in Mobile, Alabama. Seven Spartans are currently under the control of the APO with six assigned to Coast Guard Air Station

Sacramento, California. A mission package to integrate sensors, radar, and command, control, communications, computers, intelligence, surveillance and reconnaissance equipment with the aircraft, is being developed by the Naval Air Systems Command. A prototype HC-27J is undergoing 'missionisation' at NAS Patuxent River, Maryland.

## F-16Cs Deploy to Bagram

Combat operations in Afghanistan are now being supported by F-16Cs operated by the 20th Fighter Wing's 77th Fighter Squadron. They deployed from Shaw AFB, South Carolina, to Bagram Airfield on October 26. The 'Gamblers' replaced the 555th Expeditionary Fighter Squadron, which returned to Aviano AB, Italy, after its six-month deployment supporting Operation Freedom's Sentinel.

While deployed as the 77th Expeditionary Fighter Squadron, the unit will be assigned to the 455th Air Expeditionary Wing/Expeditionary Operations Group.

F-15Es assigned to the 336th Expeditionary Fighter Squadron deployed to an undisclosed location in southwest Asia in late-October and replaced the 492nd EFS, which returned to RAF Lakenheath, Suffolk.

## Phantom Wows Centenary Airshow



The annual airshow at the Japan Air Self-Defense Force's Flight Test Center at Gifu AB featured a display by a specially marked F-4 Phantom II. This year marked the 100th anniversary of the airfield – originally called Kakamigahara it began life as an army airship station – and Mitsubishi F-4EJ 87-8409 (c/n M109) received this spectacular green 'pixelated' scheme in recognition of the centenary. Orange details represent the work of the Flight Test Center. Dr Andreas Zeitler



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UK Tour	26th May - 28th May
Canada Coast to Coast [Limited seats]	9th June - 25th June
Alaska [Limited seats]	23rd June - 2nd July
Citations Airlift	23rd June - 2nd July
Oshkosh [Limited seats]	21st July - 31st July
Frankfurt	24th Aug - 27th Aug
South Africa [2 seats left]	16th Sept - 26th Sept
NBAA	13th Oct - 21st Oct

### STOP PRESS

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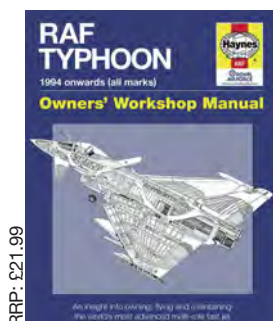
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# Jazeera Airways Goes Blue



A new corporate livery, featuring a more prominent use of blue on the tail and a restyling of the titles on the fuselage, has been introduced by Kuwaiti low-cost carrier, Jazeera Airways. Aviation Image Network/BaoLuo

## World Cup Airport Worry

A new runway at Sheremetyevo International Airport, Moscow, may not be completed before the 2018 FIFA World Cup Russia begins. The football tournament, which kicks off across the country in June, is expected to welcome up to one million visitors – many arriving via the Moscow hub.

This expected influx prompted an expansion project, increasing terminal capacity to 57 million per year, adding a third runway and a supporting network of taxiways.

Local press reports suggest less than 44% of the new runway had been laid by October, with further progress likely to be hampered by

winter weather. The construction company is confident work will be completed on time although the Russian newspaper *Vedomosti* has said the slow progress had forced Sheremetyevo to make provisions to accommodate the increased traffic with its existing infrastructure.

## AT200 Cargo Drone Flies

The Institute of Engineering Thermophysics of the Chinese Academy of Sciences successfully conducted a 26-minute first flight of the AT200 pilotless cargo aircraft on October 26 from Neifu Airport, near Puncheng, in Shaanxi Province. The AT200, which is fitted with a remote piloting system developed by a group of

Chinese technology companies, is based on the New Zealand-built PAC750XL utility aircraft.

The prototype, registered B-10HE (c/n 200), is a standard production airframe fitted with Pacific Aerospace's normal belly cargo pod, and all its windows blanked out. In freighter configuration it can carry

a load of 1.5 tonnes (3,307lb) and has a range of 1,356 miles (2,183km).

The AT200 uses the PAC750XL's STOL performance to operate from 656ft (200m) airstrips. The twin aims of the project are delivering cargo to remote places in China and for military logistics support for the islands in the South China Sea. **Rod Simpson**

## Safari 500 Unveiled



Florida-based Safari has already sold six of its new 500 helicopter and expects to start deliveries in 2018. **Rod Simpson**

The Safari Helicopter Company, which manufactures the widely used piston-engined 400 variant, has launched its new Safari 500. This two-seater prototype, registered N15BB, has an all carbon fibre fuselage and a dual-skid undercarriage.

It uses the dynamic components of the Safari 400 with power from a 180hp Lycoming O-360-C2C engine. The cabin will be air conditioned, have dual controls and a large central console with space for a substantial avionics package. **Rod Simpson**

## FedEx Launch Order

A contract for the firm purchase of 30 ATR 72-600Fs, plus 20 options, has been signed by FedEx Express. The turboprops will be the first ATRs to be delivered in freighter configuration from the factory, with the new variant equipped with a forward large cargo door (LCD) and a rear, upper-hinged cargo door.

Deliveries are scheduled to begin in 2020. FedEx worked with ATR to develop the new aircraft.

Commenting on the contract, David L Cunningham, FedEx Express President and CEO, said: 'ATR aircraft have been successfully operating in FedEx service for many years. The '72-600F will play an important role in our global network by helping us deliver fast, economical service to small- and medium-sized markets.'



# WACO Amphibian's Debut



The WACO YMF-5F has made its public debut. Rod Simpson

WACO Aircraft, of Battle Creek, Michigan, publicly launched its prototype YMF-5F amphibious biplane at the AOPA Fly-In at Tampa, Florida on October 28. The aircraft, registered N56ED (c/n F5C-8-082), which first flew on October 2, is undergoing final tests in Florida where there are many freshwater lakes for water landings.

The aircraft, which is close to achieving FAA certification, is a development of WACO's successful YMF-5D three-seat

biplane with extensive modifications for the Aerocet 3400 amphibious floats. It is powered by a 300hp Jacobs R-755A2M radial engine, modified for water operation and, despite the additional weight of the floats, can take off in less than 1,000ft (305m) from a runway. Water take-offs are achieved in around 15 seconds. The YMF-5F will have a base price of \$595,600 and comes equipped with a Garmin avionics panel. **Rod Simpson**

## Widerøe E190-E2 Due in April

The first production E190-E2 will be delivered by Embraer to launch customer Widerøe in April. Scandinavia's largest regional airline will start revenue services with the new aircraft shortly afterwards.

John Slattery, President and CEO of Embraer Commercial Aviation, said

Widerøe had signed a contract for up to 15 E2 jets consisting of three firm orders for the E190-E2 and purchase rights for 12 further E2s, with the deal valued at \$873m if all purchase rights are exercised.

Widerøe is configuring its E190-E2s in a single-class layout with 114 seats.

## First IndiGo ATR 72-600

Indian airline IndiGo took delivery of its first ATR 72-600 on November 17. It is the first of 50 of these turboprops it ordered in 2017. IndiGo said the the ATRs would allow it to expand its network to smaller Indian airports. The introduction of the new ATR fleet goes in line with the Indian government's Regional Connectivity Scheme, which aims to boost economic development, employment and tourism by connecting small and remote cities. Under this scheme 100 new airports are expected to be created in the next three years.

## Sichuan Special A350-900



Chinese carrier Sichuan Airlines has signed long-term leases for four A350-900s, three from AerCap and a single example from Air Lease Corporation. The three AerCap aircraft were originally built for SriLankan Airlines, but the carrier

## IN BRIEF

A new Marrakesh-London/Gatwick service was inaugurated by low-cost carrier AIR ARABIA MAROC on November 1. The twice-weekly rotation operates on a Wednesday and Saturday.

Cyprus-based COBALT AIR now has a six-times weekly connection from its Larnaca base to London/Gatwick. The service adds to the airline's existing Stansted service.

CARGOLOGIC AIR, which is based at London/Stansted, has expanded its network with a new service to Tel Aviv, Israel. The weekly connection – launched on November 10 – is operated by a Boeing 747-400F and routes through Frankfurt on both legs.

Greece's AIR MEDITERRANEAN has opened a direct link from Athens to London/Stansted, its first service to the UK. The four-times weekly flight, operated by a Boeing 737, is timed to allow onward connections to the airline's Middle East and Africa network, via the Greek capital.

Low-cost airline FASTJET MOZAMBIQUE launched on November 3 and links Maputo with Beira (twice daily), Nampula (daily) and Tete (four-times weekly) using an Embraer 145 chartered from Solenta Aviation Mozambique.

Another US carrier is halting services to CUBA. Alaska Airlines said a lack of demand and changes to American travel policy made it harder for citizens to visit the Caribbean island. The airline will end its daily Los Angeles-Havana service on January 22 and redeploy the Boeing 737-800 on routes with higher demand. Frontier Airlines, Spirit Airlines and Silver Airways have already pulled out of Cuba with Sun Country Airlines axing its services before they had started.

One of Sichuan Airlines A350s, carrying test registration F-WZFK (c/n 060), has been given a livery featuring a panda design.

[AirteamImages.com/T-Laurent](http://AirteamImages.com/T-Laurent)

cancelled the contract and they are now destined for China.

## West Atlantic Moves to EMA

The UK division of European cargo operator West Atlantic has relocated from Coventry Airport to East Midlands Airport. It has leased hangar space close to its key customers DHL and the Royal Mail. The move, the company

said, was driven by a need to find increased space to accommodate its recently expanded fleet of Boeing 737s, and the fact that many of its customers are based at East Midlands Airport.

Nigel Hiorns, Managing Director for West Atlantic UK, said the company had outgrown its Coventry facility which could no longer meet the demands and needs of its business.

## Utair's New Look



Utair's new look heralds expansion for the Surgut-based airline with its hub at Moscow/Vnukovo being developed to improve regional connections, via increased frequencies and additional services. AirTeamImages.com/Alexander Mishin

A new livery has been unveiled by Utair as part of a wider rebranding. The Russian carrier described the colour scheme as deliberately "clear and concise" to illustrate "simplicity".

The updated look – consisting of a revised, minimalist logo and simplified titles – was made public just days after the airline revealed details of an expansion plan, due to launch in 2019, with the aim of increasing domestic market share to 10% from the current 6.8%. The cornerstone of the strategy is to replace Utair's ageing Boeing 737-500s with as-yet-unidentified new-generation airliners.

## 'Nyet' to Bizjet Plea

Russian aircraft manufacturer Tupolev has said 'no' to developing business jet variants of its supersonic strategic bombers, despite repeated pleas from wealthy individuals.

A company spokesman said such an endeavour would be "a very costly affair," adding that some of the technology employed on the aircraft, such as the variable-sweep wing, would "not be necessary" on a business jet, while many of the systems on the Tu-160 in particular remain classified.

## A380 Goes into Storage

The first Airbus A380, 9V-SKA, to go into service has been retired and is in storage at Tarbes Lourdes Pyrénées Airport, France. It entered service between Singapore and Sydney on August 25, 2007.

The carrier, Singapore Airlines, stopped using the superjumbo in June and returned it to the leasing company, the Dr Peters Group, which hopes to find a new operator for the aircraft.

## Platov Airport Opens

Commercial operations at Platov Airport in southwest Russia began on December 1. Development of the new \$786m international gateway – certified for operations by the Federal Air Transport Agency, Rosaviatsia, in early November following several weeks of trials – was funded by the Russian government and is part of a wider-reaching

programme to develop the country's transport infrastructure.

The facility, which can accommodate up to 3 million passengers a year, is intended to replace nearby Rostov-on-Don's existing airport, currently slated to close in March. The new facility features a single 11,800ft (3,600m) runway, a 538,000sq ft (50,000m<sup>2</sup>)

terminal with nine contact gates and parking for up to 45 aircraft.

Existing services to the southwestern city will be transferred to Platov during the first quarter of the year, giving the new airport connections to 24 destinations via 18 different airlines (13 from Russia, including based Azimuth Airlines, and five international carriers).

## Another First for Ethiopian Airlines

The first example of the Boeing 787-9 Dreamliner to enter service with an African carrier was delivered to Ethiopian Airlines on October 27. It extends Ethiopian's

tradition of setting aviation milestones for the continent: it became the first airline to introduce the 777-200LR (Nov 2010); 787-8 (Aug 2012); 777 Freighter (Sep 2012) and

777-300ER (Nov 2013).

The latest airliner, ET-AUO (c/n 38778), is being operated under a long-term lease from AerCap.

## Maiden Hawaiian 321neo Arrives

The first of 18 Airbus A321neos on order by Hawaiian Airlines arrived in Honolulu on November 17, and will be used on flights to the US West Coast. The inaugural flight is scheduled for January 8 on the Kahului-Oakland route, followed on January 18 by the Kahului-Portland link.

The airline's seasonal flights from Lihue to Oakland will resume on April 11 with the A321neo replacing the usual A330, while the daily service from Kona to Los Angeles resumes on March 11.



The countdown is on for the inaugural flight by Hawaiian Airlines of its first A321neo. Hawaiian Airlines



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# Finnair in Holiday Mood



Special reindeer decals were applied by Finnair to two Airbus A350-900s, OH-LWD (pictured) and OH-LWE, in the run-up to Christmas. The jets also sport large 'Happy Holidays' titles on the rear fuselage. Javier Rodríguez

## New Spanish Carrier



New Spanish airline Gowair is to launch a series of winter charters to Tenerife on behalf of its tour operator and parent, Gowair Vacation Holding. The Madrid-based carrier has a single Airbus A320, EC-MQH (c/n 1296), but plans to acquire a further two examples before the summer season. José Ramón Valero

## Island Air Ceases Operations

Hawaii-based Island Air has filed for Chapter 11 bankruptcy and operated its last flight on November 11. The airline was unable to find a new investor or lender to provide the funding it required to support flight operations and a successful reorganisation of its business. The airline's aircraft are now in storage.

## VLM Rewving Up

The relaunch of VLM Airlines has been boosted after it took delivery of its first Airbus A320s. The two former Thomas Cook Airlines Belgium (TCAB) examples, OO-TCT (c/n 1402) and OO-TCX (c/n 1381), were handed over in mid-November and will be based in Brussels to support ACMI and charter contracts.

The A320s were acquired as part of the May 2017 deal under which VLM's new parent, SHS Aviation, agreed to acquire some of TCAB's contractual obligations as well as its Air Operator Certificate and 40 ground staff (the remainder were absorbed into Brussels Airlines).

Their arrival came barely two weeks after the airline, which suspended operations last June after filing for bankruptcy protection amid mounting debts, resumed scheduled services between its Antwerp base and London City Airport after a nine-year break.

## CIVIL ORDERS

Airline	Aircraft	Number	Order Placed	Notes	Airline	Aircraft	Number	Order Placed	Notes
Air Asia	A320ceo	14	October 2017		Frontier Airlines	A320neo	100	November 15, 2017	MOU with Indigo Partners' four portfolio airlines (other details for Frontier and the three other airlines, Volaris, JetSMART and Wizz, are below)
Undisclosed	A320neo	7	October 2017		Frontier Airlines	A321neo	34	November 15, 2017	
Viva Aerobus	A320ceo	2	October 2017		JetSMART	A320neo	56	November 15, 2017	
Undisclosed	ACJ320ceo	1	October 2017		JetSMART	A321neo	14	November 15, 2017	
American Airlines	E175	10	October 31, 2017	Firm order, purchase rights exercised from original 2013 contract	Volaris	A320neo	46	November 15, 2017	
FedEx Express	ATR 72-600	30	November 8, 2017	Deal includes an additional 20 options	Volaris	A321neo	34	November 15, 2017	
CDB Aviation	737 MAX 8	42	November 9, 2017		Wizz Air	A320neo	72	November 15, 2017	
CDB Aviation	737 MAX 10	10	November 9, 2017		Wizz Air	A321neo	74	November 15, 2017	
CDB Aviation	787-9	8	November 9, 2017		CDB Aviation	A2320neo	90	November 15, 2017	Firm order
China Aviation Suppliers Holding Co	Various	300	November 9, 2017	Orders and commitments for single- and twin-aisle aircraft signed during President Donald Trump's visit to China	Flydubai	737 MAX	225	November 15, 2017	Commitment for 195 MAX aircraft and purchase rights for an additional 50
Azerbaijan Airlines	787-8	5	November 12, 2017	Deal also includes commitment to purchase two large freighters	Nordic Aviation Capital	Q400	2	November 15, 2017	NAC will lease aircraft to Jambojet, Kenya
Emirates	787-10	40	November 12, 2017		Air Sénégal	A330neo	2	November 16, 2017	MOU
ALAFCO	737 MAX 8s	20	November 13, 2017	Order finalised	SCAT Airlines	737 MAX 8	6	November 16, 2017	Also includes purchase rights for additional five 737 MAX 8s
Wataniya Airways	A320neo	25	November 14, 2017	Memorandum of understanding (MOU) with Golden Falcon Aviation, the exclusive aircraft provider of Wataniya Airways	Avolon	737 MAX	75	November 19, 2017	55 MAX 8s, 20 MAX 10s plus options for 20 additional MAX 8s. Deal now finalised after announced as MOU at Paris Air Show
Ethiopian Airlines	777F	4	November 14, 2017	Two new freighters and the two announced as a commitment in June					
EgyptAir Holding Co	CS300	24	November 24, 2017	Letter of intent (LOI), includes 12 aircraft with purchase rights for an additional 12					



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We've also introduced something different on the back pages; sections dedicated to commercial helicopters, business and commercial aviation.

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# Buchon Back in the Air



The restored Hispano HA-1112-M4L back in the skies with Luftwaffe markings. Steven Coe

Richard Grace took Hispano HA-1112-M4L Buchon G-AWHC for its first post-restoration flight on November 24 at Sywell Aerodrome, Northamptonshire. The aircraft is the sole

remaining two-seater produced by Hispano in 1954 and has been restored to flight over the past 18 months by Air Leasing.

It is one of the type acquired for use in

the 1969 *Battle of Britain* film, some of which was filmed at Sywell, making it quite fitting that it should return to the skies at the same airfield almost 50 years later. **Steven Coe**

## Former RAAF Orion to Fly Again

Lockheed AP-3C Orion A9-753 is to be restored to flying condition by Australia's Historical Aircraft Restoration Society (HARS). Built as 160753 and delivered to the RAAF in May 1978, the aircraft was upgraded to AP-3C standard in 2011 and has been used in local and overseas operations, including the search for the missing Malaysia Airlines Boeing 777 that was operating flight MH370. It arrived at its current home, Albion Park, Illawarra, New South Wales, in December 2016.

HARS has now obtained the necessary approval to operate the aircraft, which was officially conveyed at a handover ceremony on November 3. HARS intends to fly the Orion as a salute to all the personnel who undertook maritime missions with the RAAF.

**Phil Buckley**

## Historic Chipmunk's Spring Date

The first Chipmunk built in the UK will return to the skies in the spring. It is owned by Roger Brookhouse and has been extensively rebuilt by Touchdown Engineering at Old Buckenham, Norfolk.

DHC-1 Chipmunk WB549 (G-BAPB) was displayed at the 1949 Farnborough Air Show in the hands of de Havilland test pilot Pat Fillingham. Following use as a trials aircraft it spent a long period with the Empire Test Pilots' School at Farnborough before joining the civil register in 1973.

The aircraft will be operated by Bicester-based Finest Hour Experiences and will be available to the public for air experience flights. **Thanks to Chris Thompson**

## Grissom Museum Hustler Repainted



Convair TB-58A Hustler 55-0663 has been repainted by staff and volunteers at Grissom Air Museum near Peru, Indiana. It was built as a YB-58A prototype in 1959 and the aircraft is now the world's oldest Hustler.

Having originally been used for armaments trials, it was later taken on by

**A gleaming Hustler after restoration work at Grissom Air Museum.** Tony Sacketos

NASA to perform sonic boom testing. It then flew with the 305th Bomb Wing at Grissom (then known as Bunker Hill) following modifications to TB-58A trainer status.

**Tony Sacketos**

## Neptune Service at an End

The Lockheed P-2's working life is over. A public event at Missoula, Montana on September 30 marked the retirement of Neptune Aviation's fleet of Lockheed P-2 Neptune water-bombers. As these were the last of the type to see operational service, the occasion also celebrated the completion of an impressive 70-year career.

Initially the US Navy's principal maritime patrol aircraft during the early years of the Cold War, they have served as water-bombers for the last 48 years.

Six of Neptune's seven airworthy P-2s were gathered at Missoula. Five of the fleet are being offered to museums and two will be retained by the company for airshow appearances. **Keith Gaskell**



# Mustang's First Flight Since 1946

North American P-51C Mustang 43-24907 flew for the first time in more than 70 years on October 16. The Texas Flying Legends Museum's aircraft took off from Bemidji, Minnesota following a three-year restoration by AirCorps Aviation.

The fighter, which last flew in 1946, has been painted to represent 42-103585 *Lopez's Hope 3rd*, the wartime mount of Lt Donald S Lopez who flew a total of 101 missions and is credited with shooting down five Japanese fighters (all but one scored while flying a Curtiss P-40 Warhawk). **Thanks to Chuck Cravens-AirCorps Aviation**

**P-51C Mustang 43-24907 is back in the skies for the first time since just after the end of World War Two.**  
AirCorps Aviation



## Swedish Lodestar on Display

Skilled work by volunteers led to Lockheed Lodestar SE-BZE being put on display at the Arlanda Aircraft Collection near Stockholm, Sweden.

The aircraft was built in 1943 in Burbank, California for the USAAF and was later used by the Norwegian government. After passing through the hands of various

owners, it was imported into Sweden in 1954, where it again had a number of keepers.

The Lodestar made its final flight in 1966, landing at Arlanda. It was stored for four decades before the Arlanda Aircraft Collection began restoration. A team led by Lasse Blixt has returned the classic

airliner to the colours it wore when flying with Swedair.

Due to a lack of space, the outer wings have not been reattached, but the interior has been completely refurbished, and includes passenger seats and cockpit instrumentation. The interior is accessible to visitors. **Lennart Berns**

## Polish-link Skytrain Restoration

A Douglas C-47A Skytrain 42-92139 (CF-TES), used during World War Two to transport exiled Polish government officials, has been saved. The aircraft, used post-war as an airliner by Trans-Canada Airways, had been in storage with the RCAF's 17 Wing for many years.

The Skytrain had been earmarked for

scrapping, and although the wings have already been removed from the fuselage, it will now be saved and restored to static condition in Winnipeg, Canada.

Its provenance was brought to the attention of Poland's present government which is keen to have it returned to Europe after it has been restored. **Thanks to Paul Collins**

## Utah Museum's Harpoon Project

Extensive restoration is planned by the Vintage Aviation Museum at Woods Cross, Utah, for its recently acquired Lockheed PV-2 Harpoon 37276 (formerly N7272C).

The aircraft is currently in storage at Johnson County Airport in Buffalo, Wyoming. A team from the museum visited the site and is now working on the aircraft's twin rudders at its base, near Salt Lake City.

It is hoped to prepare the Harpoon for a ferry flight to Utah in 2018. Subject to funding, extensive restoration work will then continue at the museum.

The aircraft is believed to have been grounded for at least ten years.

## 'Black Mike' Arrives at Cosford



Phantom FG.1 XV582, known as 'Black Mike', has arrived by road at the RAF Museum Cosford, from Leuchars in Scotland.

The airframe, now owned by GJD Services, has been the subject of a campaign by aviation enthusiasts to restore it to exhibition standard.

David Butterfield, from the British Phantom Aviation Group, said: "Our hardworking team of volunteers has shown outstanding

**McDonnell Douglas F-4 Phantom XV582 'Black Mike' arriving on a low-loader at Cosford in October.** Crown Copyright, via RAFM

knowledge, skills and aptitude to make the move from Leuchars happen. We look forward to working with Cosford over the coming months and we are certain that the aircraft will be a great attraction within the RAF100 static display [which will be part of the airshow on June 10]."

### IN BRIEF

An airliner has been converted into a restaurant, bar and flight crew trainer in Loma Grande, 34 miles from Paraguay's capital, Asunción. The FOKKER 100 ZP-CFL previously flew with Sol del Paraguay, and is now in the grounds of Hotel del Rancho. It continues to wear most of its service livery.

Restoration to static display condition at Torrejón, Madrid has been completed on McDonnell Douglas RF-4C PHANTOM CR12-55/12-64. The jet was taken on charge by the Spanish Air Force's 123 Escuadrón in 1995 to reinforce its reconnaissance fleet. Ala 12 operated 18 RF-4Cs between 1978 and 2002, and 12-64 has been put on display near its headquarters.



# QANTAS BOEING 787s FULFILLING THE DREAM

The first Dreamliner for Qantas has entered service with the type set to enable the airline to achieve a long-held aspiration, as **Chris Frame** explains.

**W**hen the first Qantas-branded Boeing 787 Dreamliner touched down at Sydney Airport on October 20 last year (2017), the carrier had much to celebrate. The arrival of this first aircraft, VH-ZNA, marked the highlight of the its Dreamliner journey, which began in 2005.

Amid much fanfare, the 236-seat airliner was proudly towed into the company's Sydney Jet Base for an official welcome ceremony, an activity that has been performed many times over the years when the Australian carrier has introduced new aircraft types.

Yet, despite the familiarity of the event, CEO Alan Joyce was particularly excited about the new jet's potential. This aircraft will establish the long-desired direct connection between Australia and the UK – a route set to revolutionise Qantas' long-haul appeal.

Joyce said: "It [the 787] gives us a combination of flying range and passenger comfort that will change how people travel. This aircraft means we can finally offer a

Above: **Qantas' first 787-9 Dreamliner VH-ZNA.**  
Bernard Proctor

direct link between Australia and Europe, with our Perth to London flight that starts next year [2018]. We're looking at several other exciting route options as well."

There's no escaping the fact that Qantas' Dreamliner story has been a tricky one; plagued by delays at a time when it desperately needed to revamp its ageing international fleet.

But its 2017 entry into service marks the culmination of the carrier's own dramatic transformation; a change that saw the airline rebound from one of the largest financial losses in Australian commercial history to achieve record profits and begin new long-haul routes.

## THE LONG ROAD

Qantas' journey with the Dreamliner officially began in December 2005, when the Australian carrier and Boeing jointly announced a hallmark order for 115 new 787s.

The original agreement included 45 firm orders, 20 options and rights for 50 additional aircraft in a move that the then CEO Geoff Dixon said was setting a course for the future.

"With our unique geographic challenges, we need all the advantages we can take to compete effectively against some of the industry's toughest. The 787 family will help us provide increased or new services by Qantas and Jetstar to 15 destinations and to destinations which we cannot currently profitably serve," Dixon explained at the time.

Qantas' low-cost subsidiary Jetstar was to get the Boeing 787-8, with the first aircraft expected to enter service in August 2008. The larger 787-9 would be for the major brand and was planned to begin mainline operations in July the following year.

The stakes were high, reportedly worth some AU\$23bn. The aircraft was pegged as a vehicle to revolutionise the carrier's operations. Not only would it significantly improve route economics, but also promised to enable expansion of international operations into Asia, the Middle East and Europe.





Below: **The Economy Class cabin sports maroon seating with adjustable headrests.**  
All photos Chris Frame, unless stated

Below right: **Large in-flight entertainment screens are available in all classes, pictured are those in Economy.**

Bottom: **The Premium Economy cabin is finished in brushed aluminium and grey fabrics.**

Bottom right: **The 787's Business Suite is an updated version of that used on the A330 fleet, with movable dividers.**

It was planned to utilise the aircraft both internationally and on domestic routes, replacing the reliable-yet-ageing Boeing 767-300ER fleet that had formed the backbone of domestic trunk routes since 1995.

The 787's early life was characterised by delays as manufacturer Boeing struggled with the monumental task of creating a commercial aircraft unlike anything then on offer.

A series of highly publicised delays meant the first 787 wasn't rolled out until July 2007. Further setbacks led to the maiden flight not taking place until December 2009, well past Qantas' original planned entry dates for its 787s. Further delays ensued leading to the first Dreamliner delivery for launch customer ANA not taking place until September 25, 2011.

For its part, Qantas continued to operate its Boeing 767 fleet domestically, while the purchase of Airbus A330s (as well as a transfer of some aircraft from mainline services) enabled Jetstar to start international operations.

In 2012, the carrier dramatically reorganised its international business in an attempt to stem losses and revitalise its appeal in a crowded market. Key to the new strategy was an unprecedented ten-year partnership with Emirates, a move that saw Qantas transfer its European connection hub from Singapore to Dubai.

Starting in 2013, its Airbus A380s started flying to London via Dubai, while existing Boeing 747-400 services to less

busy destinations such as Frankfurt were withdrawn, as the airline codeshared with Emirates to locations throughout Europe. London is now the only destination served in Europe by Qantas.

## JETSTAR

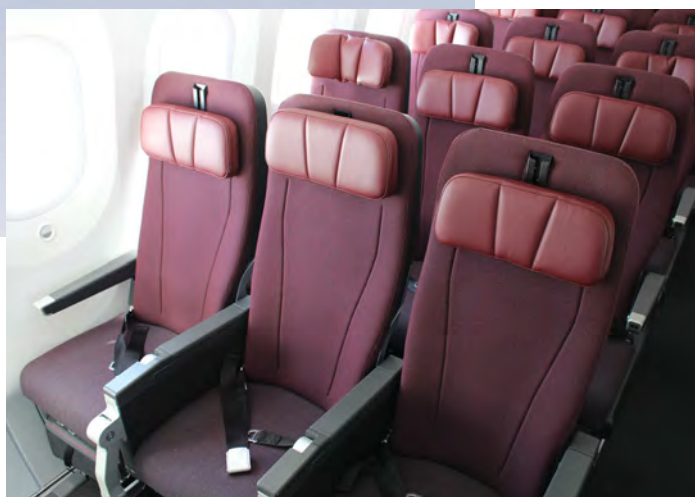
Despite delays and slumping profits, Qantas Group finally took possession of its first Dreamliner in October 2013. This 'dash eight' model, registered VH-VKA, was handed over to Jetstar and began scheduled flights on November 13.

This aircraft was the first of 11 for the budget carrier, which configured its fleet in a two-class layout, sporting a modest Business Class cabin in a 2-3-2 configuration, as well as a larger economy cabin in the standard 3-3-3 layout.

The aircraft are owned by Qantas and leased to the low-cost subsidiary, meaning the mainline unit gained valuable experience with the aircraft; including delivery processes, introduction into service and maintenance.

Jetstar used its Dreamliner fleet to expand services into Asia, and as each new aircraft arrived an existing A330 was transferred back to the parent organisation.

However, while Jetstar celebrated its newest aircraft, the mainline fleet was experiencing a dramatic restructuring of its own, off the back of an unprecedented loss of AU\$2.8bn in 2014. The airline moved quickly to accelerate its transformation programme, which included further route





restructures and a greater focus on aircraft utilisation.

Over the next two years the company recovered from its financial woes, posting a record profit of AU\$1.03bn in 2016. This overwhelming result bolstered the operator's position and enabled it to commit to a 2017 delivery date for its own 787-9s.

## DIRECT TO LONDON

With the future of the 787 in the Qantas fleet assured, the carrier set about revolutionising the way the Dreamliner would operate. In a world-first move in December 2016, it announced direct flights from Australia to the UK, with the 787-9 to operate a daily Perth to London Heathrow service.

A jubilant CEO, Alan Joyce, was quick to point out the significance of the route, which spans 8,958 miles (14,400km). "This is a game-changing route flown by a game-changing aircraft. Australians have never had a direct link to Europe before, so the opportunities this opens up are huge," commented Joyce when the flights were announced.

"It's great news for travellers because it will make it easier to get to London. It's great news for Western Australia because it will bring jobs and tourism. And it's great news for the nation, because it will bring us closer

Above: **Qantas Group's first 787, VH-VKA, was delivered to low-cost subsidiary Jetstar.**

Bottom: **Great Southern Land arriving for the first time in Sydney.** Qantas

to one of our biggest trade partners and sources of visitors."

In addition, Dreamliners will be used on long-haul routes from Australia's east coast to the United States, while further direct connections to European cities, such as Paris, are a real possibility.

To cater for these long-haul services, the carrier has upgraded the design of its three-class cabin, ensuring the extreme-duration services are not just bearable, but comfortable for travellers.

With no First Class, the airline has pegged its premium future on a highly regarded Business Suite. There are 42 spread out in a spacious 1-2-1 configuration, located across two cabins.

The suite is a refined version of the design used aboard the company's A330 fleet, and includes the same 6ft 6in (2m) fully flat bed, ample work and storage space and high levels of privacy for each passenger.

Key changes include a darker wood veneer, giving the seat a more luxurious feel, as well as a movable divider between the middle seats (it is fixed on the A330),

making the 787 far more 'couple friendly' on long flights.

Each Business Class traveller is provided with a turn-down service, complete with mattress, pillow and plush duvet. A smart inclusion is the 'do not disturb' button, which changes the illumination of the seat number from white to red, meaning the crew will leave sleeping passengers alone if they don't wish to be woken for meals.

The seats come with an easily accessible multi-use charging point, a USB point and a headphone jack, while stylish sound-cancelling headphones are provided. There is also a handy storage space for tablet computers or laptops, and a place to keep a bottle.

The hard product is matched by a high level of service, with crew trained to remain attentive over long-duration flights. Menus are inspired by Australian chef Neil Perry, and include a selection of "small plates" (Qantas' term for entrées), main dishes and desserts, and a well-stocked snack bar.

Premium Economy comprises 28 seats in a 2-3-2 layout. These seats are a refined version of the design used on its A380s and include a number of changes that add an overall more premium feel.

A notable addition is the brushed aluminium shell, giving a sense of privacy.





## FLEET INFORMATION

Aircraft Designation:	Boeing 787-938
Registrations:	VH-ZNA – VH-ZNH
Names:	<i>Great Southern Land</i> (delivered), <i>Great Barrier Reef</i> , <i>Boomerang</i> , <i>Skippy</i> , <i>Waltzing Matilda</i> , <i>Uluru</i> , <i>Quokka</i> , <i>Dreamtime</i> (not announced yet which of the yet-to-be delivered aircraft will have the above names)
Engines:	GE9x 1B74/75/P2 engines
Range with full payload:	9,008 miles (14,498km)
Did you know?	Qantas hosted a naming competition for the 787-9 fleet with the winners announced in June 2017. There were more than 60,000 entries with name suggestions and 45,000 public votes on the short list.
Delivery Flight:	The aircraft departed on delivery from Everett Field near Seattle on October 17, 2017. It had the flight number QF7879 and flew to Sydney via Honolulu. The stop at Hawaii is something of a Qantas tradition for the first example of a new type of Boeing airliner for the carrier.

Dark leather chairs and brown-leather footrests complement the metallic design. Seat-back in-flight entertainment screens are a generous 13in (in Business they are 16in and 12in in Economy) and there is a second small tray for easy storage of personal electronic devices.

With a pitch of 38in (96.5cm), the seat meets most Premium Economy expectations; although its generous recline does risk a reduction of the usable space for passengers behind a fully reclined seat. Premium Economy seats come with a pillow, blanket and menu service, as well as an amenities kit.

The remaining 166 passengers travel in Economy Class, which is arranged in a 3-3-3 configuration. With long-haul services in mind, seat pitch is set to 32in (81cm) – providing an extra inch (2½cm) of legroom when compared with Qantas' existing fleet. This goes a long way towards compensating for the seats marginally narrower design than in the airline's A380s and Boeing 747s.

Each seat comes with a 12in (30½cm) entertainment unit, which sits above a handy tray, enabling travellers to utilise their own electronic devices in-flight. There is a small storage pouch for personal effects, an adjustable headrest and each seat comes with a pillow, blanket and basic amenities kit.

Welcome drinks are served, bringing the international economy embarkation experience in line with the premium cabins, and headsets are provided free.

### THE FUTURE

The first aircraft spent much of its first weeks of service operating familiarisation flights between Melbourne, Sydney and Perth. On December 15, it was due to transition to

Above: **The crew rest area aboard the 787 provides sleeping space for the crew on ultra long-haul flights to London.**

Below: **With Perth to London Heathrow flights starting in March, the 787 will be a familiar sight in Perth.**

long-haul services, operating Melbourne to Los Angeles.

The 787 fleet will be utilised on Qantas' connecting services between Los Angeles and New York, currently run by the 747s, while in March 2018 they will inaugurate the ground-breaking Perth to London flights.

As part of the second five year term of Qantas' Emirates partnership the Australian carrier will continue to codeshare with latter airline on European services via Dubai. However, no Qantas aircraft will stop in Dubai from March onwards as its services to Europe will bypass the Middle East airport and operate via Perth or Singapore.

The 787's potential to open up new and exciting routes throughout Asia and Europe is immense. One thing is for sure, as company profits continue to soar, and with seven additional 787-9s on firm order, 11 787-8s in the Jetstar fleet and options for a further 45 Dreamliners – the future of Boeing's newest jetliner in Australia is well and truly secure. **AN**





# FLYING THE F-117A PART 2

# BANDIT BOSS

In this second article, **Greg Feest** details other elements of his career on the F-117A Nighthawk, including flying a combat mission to Panama and becoming a squadron commander.



In last month's article, I related the story of my first night's mission during Operation Desert Storm in 1991. However, this was not the first time I had flown combat in the Lockheed F-117A Nighthawk. On December 19, 1989 I was the F-117 Mission Lead for Operation Just Cause, the first time the stealth fighter saw action.

In the spring of 1989, at our base in Tonopah, Nevada, my squadron commander told me to see the wing commander in his office. When I arrived, I was informed I would be involved with a combat mission, along with several other operators from the wing staff. One was a pilot from the wing's planning office and another was one of our electronic warfare officers. We were reminded not to let anyone else know what we were doing — I couldn't even tell my squadron commander. Even though the F-117A had been revealed to the public in November 1988, this mission was going to be covert.

Above: **Every F-117A pilot was given a Bandit number based on when they first flew the Nighthawk.** Rich Cooper/COAP

Before the F-117A was chosen for it, we had to prove we could do the job to some of our special forces brethren. After all, we couldn't just tell these combat warriors that we were able to hit a target at a precise time, we had to show them! Several of the special ops planners came to Tonopah one night. They gave me a photo of a small target, highlighted by a triangle, which was located on one of the Nellis AFB ranges. They said they would be on the range and that I needed to demonstrate how I could hit the target at a precise time; they would give me my time-over-target (TOT) right before I took off. We had the ability to videotape all our target runs in the F-117A so, when I returned to the squadron after flying my mission, they asked for my tape. Since they were on the

range, they knew my bomb had hit at the exact time they gave me, but they wanted to see my recording to convince them I had accomplished the task. Let me just say they were convinced. So, the F-117A was chosen as the aircraft for this covert mission.

Our three-man team spent the next several months planning our missions with our special forces colleagues. The primary objective of Operation Just Cause was to capture General Manuel Noriega and restore democracy to Panama. Our main mission involved hitting targets that would stun and disorientate the Panamanian Defense Forces, so our special forces, consisting of US Navy SEALs and the Army's Delta Force and Rangers, could drop into Panama and convince them to surrender. The F-117A was chosen because our pilots had proven we could hit targets with precision and to exact timing. We had to be accurate so as not to cause any collateral damage and on time





**Lt Col Greg Feest, 9th FS commander, in front of a damaged hardened aircraft shelter at Ahmed Al Jaber AB in Kuwait that had been targeted by an F-117A during Operation Desert Storm in 1991. Five years later the Nighthawk was deployed to the base for Operation Desert Strike. via Greg Feest**

because the special forces planned to land in the same fields we bombed, 30 seconds after our planned TOTs.

On December 19, 1989 we launched from Tonopah and flew to Panama. Immediately after take-off we joined our tankers and flew with them for almost eight hours in darkness, performing seven in-flight refuellings en route to the Central American country. When we separated from the tankers, we started our target runs. As the lead pilot, I was aiming for a field just short of two of the Panamanian Defense Forces' barracks. There was no

intention to kill anyone, just to disorientate, and my 2,000lb (907kg) laser-guided GBU-27 bomb hit the field at the exact TOT. I 'safed' up my weapon system, headed back to my tanker to refuel and started the journey home. On this dark night over Panama, the F-117A had made its successful combat debut.

### **HOLLOMAN AIR FORCE BASE**

After flying combat sorties in the F-117A during Operation Desert Storm, I was rewarded with a fighter pilot's nightmare, an assignment to complete phase two of my

professional military education (PME) at Air Command and Staff College at Maxwell AFB in Montgomery, Alabama. Following a year of education, I served as an air force liaison officer in the United States Senate. After almost two years working this staff job, my boss called me into his office and asked if I was interested in going to Holloman AFB, New Mexico, as an operations officer in the F-117A training squadron, where the Nighthawks had relocated in 1992. Two months later, I was driving through the front gate of Holloman AFB ready to begin my ►



**Two F-117As taxiing at Holloman AFB in New Mexico. Rich Cooper/COAP**





**A 9th FS F-117A departing Holloman AFB starts to retract its undercarriage.** Rich Cooper/COAP

second tour flying the F-117A. It had been three years since I had flown an aircraft and on July 7, 1994 I found myself alone, once again, in the air in a stealth fighter.

I spent the next ten months as Operations Officer of the 7th Fighter Squadron (FS) 'Screamin' Demons', the only flying training unit for F-117 pilots. The ops officer is number two in the chain of command of a USAF squadron, just under the commander. It was a great job since I only had to worry about the pilots, while the squadron commander had to deal with running the entire unit – which at the time included all the maintenance personnel. All squadron aircrew were

instructor pilots and dual-qualified in both the F-117 and the T-38, which we used to chase the student pilots as they trained in the stealth fighter. Since all F-117As were single-seat aircraft, we had to do our inflight instruction while flying in T-38s and 'chasing' the students. It was a great opportunity to get my flight skills back in shape while waiting for my chance for squadron command.

In May 1995, due to several unfortunate circumstances, a commander in one of the two operational fighter squadrons was removed from his position. The evening prior to this, I was summoned to the wing commander's office. He told me to report

to the 9th FS 'Flying Knights' operations building the next morning and that I should be wearing that unit's patches. At 0800hrs, I would assume command of the squadron. There would not be a change-of-command ceremony. I had been preparing for this day my entire career. I was ready!

So, on May 12, I showed up at the 9th FS in my flight suit, complete with the unit's patches, and the operations officer met me at the door. He gave me a tour of the squadron and introduced me to everyone. I already knew most of the pilots since many of them had gone through the 7th for training over the last year. We stopped at the Operations



**The 9th FS with CO Lt Col Greg Feest nearest the camera.** via Greg Feest





Above: **Three F-117As receive final checks before departing Holloman AFB for Kuwait in support of Operation Desert Strike.** USAF/MSgt Val Gempis

Below: **Nighthawks being prepared for a training sortie from Ahmed Al Jaber AB in Kuwait.** USAF/TSgt James D Mossman



Counter where I met the enlisted personnel who took care of posting the flying schedule on a grease board behind the desk. There was a sign at the top of the flying schedule that read 'Squadron Commander – Lt Col Greg Feest'. I was amazed that they were able to make the sign in the last 12 hours. It looked good.

For the next several months, I learned the challenges of squadron command. Having already been an operations officer, I was entirely familiar with that side of the squadron, so I spent most of my time learning the ropes of being in charge of the maintenance personnel. Thankfully, I had an outstanding chief master sergeant willing to train me. I relied on my first sergeant and chief to guide me. After two months, my indoctrination was complete and I was comfortable in my role of squadron commander of one of only two operational F-117 stealth fighter squadrons in the world. The squadron was running smoothly and things were going great.

## DELIBERATE FORCE – THE PASTA DEPLOYMENT

On August 30, 1995 the Operation Deliberate Force air campaign against Serbia began and, as it progressed, it became obvious the Allied coalition bombs were not adequate to take out some of the harder targets, like the Banja Luka integrated air defences. The US and NATO command structures remembered how F-117As had destroyed the Iraqi IADS during Operation Desert Storm. So, on

September 9, the US Secretary of Defense authorised the deployment of six F-117As to Aviano AB in Italy. Because of our success in Iraq, senior air force leaders chose my squadron, the 9th FS, to execute the task.

It would take all my command skills and everything I had learned during my career

to make this deployment a success. Most of the squadron pilots, maintainers and support personnel had never taken part in combat operations, as they were not part of the F-117A programme during Desert Storm. It was my job to make sure they had everything they needed to succeed. I had to ensure they were able to say goodbye to their families and take care of any issues at home before departing New Mexico. Since we were going to send only six aircraft, not all the pilots would deploy. I had to decide which ones to take and who would stay home and continue to train to be ready to deploy if needed. The hardest thing I had to do was talk to the pilots who were not deploying, to convince them they would get their opportunity to fly combat sorties at another time; they would still be important to our overall effort.

Twenty-four hours later, we sent an advanced echelon of almost 200 squadron personnel to Aviano. This team included the pilots who would fly the first combat sorties, the mission planning cell (tasked to plan all the F-117A missions) and the maintenance and support personnel. The latter would make sure the aircraft were refuelled and ready to fly combat missions as soon as possible after arrival in Italy. As the squadron commander, it was my job to ensure the intelligence operations and the mission planning cell were established, so we were ready to receive the jets. My operations officer was tasked with leading the flight of six F-117As from Holloman AFB to Italy.

However, there were political obstacles. Although NATO had approved the request to accept the F-117As into Aviano, the Italian government was not in agreement. The Italians were unhappy that operations were being flown out of their country while they had little say in the entire execution of



**Brigadier General Bruce Carlson, 49th Fighter Wing commander, presenting the Nighthawk Trophy to 9th FS CO Lt Col Greg Feest. The bombing competition involving the three F-117A squadrons took place every quarter.** via Greg Feest





A 9th FS F-117A rolling out at Holloman AFB with its drag 'chute deployed. It was standard procedure to use it on landing.

Rich Cooper/COAP

Deliberate Force. They felt they were not being consulted on matters affecting Italy and were left out of the Dayton peace talks that were trying to end the conflict. For these reasons, on September 11, the Italian government officially disapproved the bed-down of F-117s at Aviano. The aircraft would not be coming.

When we first arrived at Aviano, we split up the pilots from the support personnel. Pilots would need to rest before flying combat missions, so they stayed in separate rooms in the wing's Distinguished Visitor quarters. Other squadron personnel were in the fitness centre, which had been turned into a large dormitory with cots and sleeping bags. We had more than 150 people in the gym. Television sets and movies were made available as well as patio tables for a lounge area outside.

Now that the aircraft were not coming, instead of worrying about combat sorties and enemy fire, my biggest challenge was keeping our personnel busy until we could arrange for transportation home. During time off, we sampled a number of the excellent local restaurants, so our stay at Aviano became known as the 'Pasta Deployment'. After seven days, the airlift arrived and we were on our way back to Holloman, where things quickly returned to normal.

A landmark day for me was November 2, 1995 when I flew a sortie that made me the first F-117A pilot to log more than 1,000 hours in the stealth fighter. Landing and returning to my hangar, I was amazed to see a crowd of squadron personnel lined up inside. Among them were my wife, Bridget, and two sons, David and John. After shutting down, I was met by Paul Martin, the Lockheed Martin Program Manager for the F-117A. Members of the media watched as he presented me with a plaque, identifying me as the first pilot

to achieve this milestone. He also gave me a patch stating the same – several more pilots would earn the right to wear one in the years that followed.

Over the next nine months, things remained normal in the squadron. We won all the Nighthawk trophies and bombing competitions between the fighter squadrons. We continued flying our usual training sorties every night. However, things were about to change once again.

## DESERT STRIKE

On August 31, 1996 the Iraqi military launched its biggest offensive since 1991 against the city of Irbil in Iraqi Kurdistan. The world was worried that Saddam Hussein intended to launch another campaign against

the Kurds, similar to the campaigns of 1988 and 1991. This offensive also placed Saddam in clear violation of United Nations Security Council Resolution 688, forbidding repression of Iraq's ethnic minorities.

Two days of strikes were made by the US on Iraqi forces

and to show its resolve it was also decided to deploy the F-117A to Kuwait to strike fear in Saddam and his military forces and deter any further aggression. We knew he remembered what the stealth fighter accomplished during Desert Storm and it was time to reinforce his beliefs. After I received the deployment order, I talked to the entire squadron and emphasised the importance of our mission. However, this time, one year after Deliberate Force, I did not have to tell any of the pilots that they would be staying home. It was clear all our 9th FS F-117As would deploy and we would need 'all hands on deck'. On September 13, 1996 I found myself on a transport aircraft as part of the advanced party team of 200 personnel to Ahmed al Jaber AB. It again consisted of

pilots, maintainers and support personnel who needed to get the aircraft ready for missions as soon as possible after arriving. The jets flew in on September 15 and I was flying along the Iraqi border once again the next day.

The world's media highlighted the arrival of the stealth fighter in Kuwait. Some writers and reporters were aboard one of the tankers that refuelled our aircraft as they flew from New Mexico to Kuwait. My operations officer led the aircraft en route and was interviewed by the media over the tanker's radio as he refuelled. The goal was to show Saddam that the F-117As were coming and he needed to stop his aggression. The plan worked. He moved his forces back to Bagdad as soon as our aircraft arrived in Kuwait. We spent the next ten weeks flying clockwise and counter-clockwise around the country and sometimes down south into Saudi Arabia, just to keep our combat skills intact. However, we never flew into Iraq or dropped any weapons. In this situation, our show of force by deploying F-117As into Kuwait solved this diplomatic crisis. On December 6, I led the aircraft home. We would be back with our families for Christmas.

## FINAL FLIGHT

Arriving at Holloman, I made sure all deployed personnel were able to spend some

As its name suggests, the Nighthawk's 'natural environment' was in the dark when all operational missions were conducted.

Rich Cooper/COAP







**This unusually angled shot of the F-117A provides an interesting perspective on its stealthy shape.**

Rich Cooper/COAP

time with their families and friends. We kept operations slow until after the holidays, then it was back to work, training and ensuring we were ready if we had to deploy.

I wish I could have stayed the squadron commander of the 9th FS 'Flying Knights' for the remainder of my career. Unfortunately,

that is not allowed – the normal tour is two years. In my case, I actually had 25 months and was happy to have the extra time. On May 12, 1997 I flew my last sortie in the F-117A and, the following month, my squadron command came to an end and I was off once again for a year of professional

military education at the National War College. It would be several years before I flew combat sorties again.

Not just the American people, but the entire world had become aware of the value of stealth technology and, in particular, the role played by the F-117A. **AN**





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Published by Haynes Publishing:  
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## COMBAT OVER THE MEDITERRANEAN – THE RAF IN ACTION AGAINST THE GERMANS AND ITALIANS THROUGH RARE ARCHIVE PHOTOGRAPHS

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**Written by: Chris Goss**

**Price: £14.99**

A remarkable collection of 247 black and white photographs from an album presented to the author by the family of a former commanding officer of 252 Sqn. Most of the



images are amazingly sharp gun camera stills from Bristol Beaufighters which give a unique insight into the air war over the Mediterranean and Aegean between 1942 and 1945. Fortunately, each photo was dated so the author has been able to match the scenes with the relevant entries in the squadron's Operations Record Book and also correlate some with German records.

After an introduction outlining 252 Sqn's history, the book is divided into four parts covering each year from 1942 to 1945. The detailed captions have a narrative quoting aircraft serial numbers, crew names, the names of many ships seen under attack and the location.

Published by Frontline Books:  
ISBN 9781473889439 and is available from [www.pen-and-sword.co.uk](http://www.pen-and-sword.co.uk)

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Upgraded to the Short S.30 with more powerful engines and longer range, the type was pressed into service with the RAF early in World War Two and shows the development path of the legendary Sunderland. All were given names beginning with 'C', hence the C-Class title.

The S.23 model is finished in the attractive 1939 scheme of silver with red, white and blue flashes which identified them as non-combat aircraft. In contrast, the S.30 (V3137) operated by the RAF is in Coastal Command camouflage.

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## SHADOW OVER THE ATLANTIC – THE LUFTWAFFE AND THE U-BOATS: 1943-45

**Book**

**Written by: Robert Forsyth**

**Price: £25**

In the words of a Luftwaffe report: "Above all, it is necessary to give the U-boats



'eyes.' That is, adequate air reconnaissance by the Luftwaffe." The story of how this was achieved centres upon a unit whose name translates as Long-Range Reconnaissance Group 5. The unit flew from Mont-de-Marsan in western France, using the four-engined Junkers Ju 290. Had the Ju 290 been operational before November 1943, U-boat successes against Allied shipping could have been even more devastating.

The author is well known for his previous books on Luftwaffe subjects and has produced an outstanding work based upon the chance acquisition of an unpublished history of the unit, written by one of its senior officers. Many of the individual sorties, frequently amounting to 18 hours or more, are described in detail – down to crew names, aircraft identity and often supported by vivid personal reminiscences. This information is coupled with official Allied intelligence files, illustrated with 64 black and white photographs and three pages of colour profiles, and unit emblems.

Published by Osprey Publishing,  
ISBN 9781472820457, available from [www.ospreypublishing.com](http://www.ospreypublishing.com)

## V FORCE BOYS – ALL NEW REMINISCENCES BY AIR AND GROUND CREWS OPERATING THE VALIANT, VULCAN AND VICTOR IN THE COLD WAR AND BEYOND

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Dropping an H-bomb during the Christmas Island tests, baling out of a Vulcan with two engines on fire and Quick Reaction Alert (QRA) procedures in response to a four-minute warning of nuclear attack are just a few of the dramas graphically described.

This unmissable collection of stories brilliantly describes what life was like defending the UK and its overseas territories in that period. Illustrated with 62 colour photos and 53 in black and white.

Published by Grub Street,  
ISBN 9781910690383, available from [www.grubstreet.co.uk](http://www.grubstreet.co.uk)





# RAF 100th ANNIVERSARY

Welcome to the *Aviation News* incorporating *Jets* tribute to the RAF's 100th anniversary. In this January issue we mark the anniversary year with a number of articles that cover the past, present and future. Below we list the key public events throughout the country.



A legend in its own lifetime: the Tornado GR1/4 has proved a versatile and potent combat aircraft for the RAF in numerous campaigns. Mark Ranger

**March 31** – opening concert at the Royal Albert Hall, London

**April 1** – RAF100 Baton Relay Commences

**May 16 to 20** – National Aircraft Tour, Cardiff City Hall Gardens

**June 10** – RAF Cosford Airshow

**June 21** – reopening ceremony of the RAF Museum, London

**July 6 to 9** – National Aircraft Tour, Horse Guards Parade, London

**July 10** – RAF100 Parade and Flypast at The Mall, London

**July 13 to 15** – Royal International Air Tattoo at RAF Fairford

**August 4 and 5** – National Aircraft Tour, Newcastle, Northern Ireland

**August 4 and 5** – Northern Ireland Airshow at Portrush

**August 25 to 27** – National Aircraft Tour, Victoria Square, Birmingham

**September 1 and 2** – National Aircraft Tour, Glasgow Science Centre

**September 15 and 16** – National Aircraft Tour, Cathedral Gardens, Manchester

**September 16** – Battle of Britain Service, London

# BY FORCE OF ARMS



Dunkirk, the Battle of Britain, the 1942 Channel Dash, Dieppe... 65 Sqn's Spitfires were engaged in some of the major battles of World War Two and lived up to its motto 'By force of arms', as **Tom Spencer** recounts.

**W**hen World War Two began on September 3, 1939, 65 Sqn was one of the few RAF units equipped with Spitfires. It had switched from flying biplane Demons and Gauntlets as war clouds loomed.

The first Spitfires arrived at Hornchurch, Essex, in March 1939 amid much excitement. Commanded by Sqn Ldr D Cooke, there was soon a full complement of aircraft and pilots quickly became operational on their potent new mount. The squadron, which had seen distinguished service in World War One, was ready as part of Fighter Command. It had been re-formed on August 1, 1934 but quickly lost

personnel to the Middle East because of the Abyssinian crisis in 1935. It was reduced to a cadre but began building up again with Gauntlets by July 1936.

Wartime operations started on September 5, 1939 with a scramble to investigate an unidentified aircraft approaching London, though it didn't take long to classify the 'intruder' as friendly.

The squadron moved to Northolt, northwest London, on October 2 and began a routine of sector patrols throughout the winter in defence of the capital. No action came its way during the first months of 1940, but this changed in May, by which time it had returned to Hornchurch.

## DUNKIRK

When the Germans went on to the offensive in the spring of 1940, the Allied armies were swiftly pushed back and eventually Fighter Command was ordered to commit some of its precious Spitfires to the battle. On May 17, a section from 65 Sqn, led by Fg Offs Brian Kincome and Welford patrolled over Flushing, the Netherlands, and engaged a Ju 88, which crashed on to a beach. It was the squadron's first victory of the war and the first of 11 for the 23-year-old Brian Kincombe.

The British Expeditionary Force was falling back and eventually concentrated around Dunkirk to await evacuation. Patrols over the Boulogne-Calais-Dunkirk areas were in



In early 1941, the unit began offensive operations over France with Spitfire IIa P7665/YT-L becoming an early casualty when it was lost on February 5 with Plt Off Hill becoming a PoW. P H T Green Collection



regular combat with the Luftwaffe and several more enemy aircraft were shot down.

A large formation of Bf 110s and Hs 126s attacking Calais on May 26 were tackled by 12 of 65's Spitfires, which claimed six destroyed and five as probable. On the debit side, K9912 YT-O, flown by Fg Off Ken Hart, was shot down and seen to crash near Dunkirk; Fg Off J Welford was also lost. The following day over the Dunkirk beaches, two Do 17s, two Do 215s and a Ju 88 were claimed destroyed with several more as probables.

The battles were taking their toll and 65 was reduced to just eight serviceable Spitfires by the 28th. Nonetheless, during the day another two Do 17s were claimed for the loss another Spitfire.

Exhausted after the intensive action of the previous weeks, the following day it was withdrawn north to Kirton in Lindsey, Lincolnshire, to rest and rebuild. Against a loss of four Spitfires and two pilots, the squadron had claimed in these early clashes the satisfactory balance of 19 destroyed and 14 probables; five of the confirmed going to Flt Sgt William Franklin, who became the unit's first 'ace'.

## BATTLE OF BRITAIN

The rest was short-lived. Men and machines were returned to Hornchurch in early June from where defensive patrols and convoy escorts were flown throughout the month, during which three enemy aircraft were



Left: War clouds were looming in mid-1939 as pilots of 65 Sqn in this formation trained for what they knew would be the inevitable battles ahead.

Above: Sqn Ldr Humphrey Gilbert led 65 Sqn from December 1941 to May 1942. Author's collection

Below: In the summer of 1943, 65 Sqn received the much-improved Spitfire IX of which MH358/YT-Jas became the mount of the OC, Sqn Ldr J A Storrar. J A Storrar

destroyed, three others as probable and six damaged – all for no loss.

July continued in a similar vein with increasing Luftwaffe attacks on British coastal shipping in what was the opening round of

what became the Battle of Britain. On July 7 a convoy off the south coast came under attack for much of the day and during the evening 64 and 65 Sqn were scrambled to tackle Dornier 17s of KG 2, which were attacking vessels.

No 65's formation was, however, bounced by the Bf 109s of JG 51 and three Spitfires went down and their pilots killed. In return, three 109s were claimed, two by Franklin, who chased his first victim almost to France.

The following day Sqn Ldr Cooke in K9907 went missing over the Channel and was replaced by Sqn Ldr H C Sawyer. He led the squadron to Manston, Kent, where it was in the forefront of the fighting in the coming months.

Daily patrols and combats continued throughout July; a particularly violent series of clashes with Bf 109s coming on the 24th over the Medway. The squadron claimed four Dornier 17s damaged and three Bf 109s damaged. While 65 escaped loss three Spitfires of other squadrons were shot down and one pilot killed.

August opened quietly but the lull proved deceptive. In the late morning of the 8th a sweep over Kent by Bf 109s of II and III/JG 51 and III/JG 26 was engaged by the Spitfires of 41, 64 and 65 Sqn. In a heavy combat, 65 lost two pilots killed. August 12 was a better day, however, with claims for three destroyed, five probables and four damaged without loss. ▶





Sgt Percy Morfill flies one of 65 Sqn's first Spitfire Is during the summer of 1939. P F Morfill

The following day Sqn Ldr Robert Holland took command and, in a battle over Dover on the 16th, his squadron claimed four more destroyed for the loss of Fg Off Laurence Pyman.

The squadron continued to be heavily engaged with the Luftwaffe for the rest of the month but on September 1, after several months of intensive combat, it was withdrawn for a rest, moving north to Turnhouse, Scotland. There it quickly rebuilt and soon began flying sector patrols and shipping escorts off the Forth, but saw no fighting.

While there, 65 was designated as the East India Squadron as part of the policy of linking units with parts of the Empire and many of its aircraft later carried this title. By then, 65's pilots had claimed 34½ confirmed victories.

In late October, its Spitfires flew some fighter affiliation with 263 Sqn's Whirlwinds, returning south to Tangmere, Sussex, in November. It was soon back in action claiming a Bf 110 over Portsmouth but suffered a great loss on December 12 when Franklin was killed in action; his final tally was 13 confirmed destroyed and three shared.

## ON THE OFFENSIVE

Germany had been deterred from launching an invasion of Britain and in the New Year the RAF began offensive sorties over occupied France with 65 escorting small formations of Blenheim light bombers.

The first victory of 1941 came on the January 4 when Fg Off Finucane shot down a Bf 110 off Selsey Bill, Sussex, to claim the third of his eventual 32 victories. A rare night



Above: Sqn Ldr Desmond McMullen, with 17 and five shared victories, was already highly successful pilot when he became OC in the summer of 1942. P H T Green Collection

Below: A trio of Spitfire Is of 65 Sqn, including R6712/YT-H and R6714/YT-M, scramble from Hornchurch on August 13 when the Battle of Britain was at its height. Author's collection

success came soon afterwards when Flt Lt Tom Smart, in X4675, shot down an aircraft over Portsmouth.

During January, the squadron also began re-equipping with the improved Spitfire IIa and were soon using them on sweeps over Northern France, though it lost two on February 5 during what was termed a 'Circus'; where a large force of fighters would escort bombers and attempt to bring the Luftwaffe to combat.

At the end of February, the squadron returned to Kirton in Lindsey from where patrols off the east coast were interspersed

with an intensive period of training. In the spring of 1941, the squadron once more began operating over France, usually refuelling at a south coast airfield en route. It participated in other 'Circus' operations.

One was on February 5 when 65 provided the forward escort with 610 Sqn to the Blenheims of 114 and 139 Sqn's bombing targets near St Omer. Ten miles into France, 65 engaged some Bf 109s, three of which shot down Plt Off G Hill. 'Paddy' Finucane shot down the enemy leader, but a second Spitfire flown by Sgt H G Orchard was also lost. This type of mission became the routine for the rest of the year, with occasional successes.

For example, on July 8, two Bf 109Fs were destroyed and another damaged. In early August Sqn Ldr 'Pancho' Villa became OC and he led 13 squadron aircraft on the 12th to give withdrawal cover to the bombers that had attacked the Cologne power stations. During the sortie he damaged a 109 for his final air combat claim.

In September, 65 Sqn received some examples of the cannon-armed Spitfire IIb and on October 7 went to Westhampnett, Sussex, where it re-equipped with the more powerful Spitfire Vb. In addition to bomber escorts, 65 also began sending pairs of aircraft out over France to attack targets of opportunity in what were called 'Rhubarbs', and flew escorts to anti-shipping Hurricane attacks. One particularly successful escort was on November 27 in a convoy attack off Le Havre when two Bf 109s were shot down.

The squadron did some ship hunting of





its own a week later when it attacked a flotilla of minesweepers, damaging four and leaving one sinking. Just before Christmas, Sqn Ldr Humphrey Gilbert arrived as OC shortly before the squadron moved to Debden, Essex.

### CHANNEL DASH

During early February 1942, poor weather prevented any flying and the operations began only on the 11th. The following day, however a German Naval squadron comprising the battle cruisers of *Scharnhorst* and *Gneisenau* and the heavy cruiser *Prinz Eugen* steamed through the Channel under massive Luftwaffe escort.

They made a successful escape from Brest, France, to the safety of German waters under the noses of British forces.

RAF and Royal Navy strike units attacked the warships and in the ensuing dogfights about 15 miles off Dunkirk, 65 Sqn claimed a Bf 109F destroyed and another two as probables.

Life became somewhat rather quieter until a move to nearby Great Sampford, Essex, in mid-April. A full programme of fighter sweeps and 'Circus' operations began with the Debden Wing. Twenty-one operations were flown in April and two Bf 109s destroyed. However, during an escort of Bostons on the 27th, 65 lost three aircraft, two falling to the famous Luftwaffe ace Josef 'Pips' Priller.

At the beginning of May, Sqn Ldr Tony Bartley was promoted to OC and he led the squadron on its routine of sweeps, bomber escorts and 'Rhubarbs' throughout the summer. Occasional losses continued to be suffered, including four Spitfires in combat with Fw 190s on June 1.

On July 21, the squadron took part in a spectacular mass 'Rhubarb' during which gun positions, trains and barges were attacked, though two more aircraft were lost off Zeebrugge, Belgium.

### DIEPPE

Operation Jubilee, a large raid on Dieppe, was launched on August 19 by which time Sqn Ldr Desmond McMullen was at the helm.

## ***'In addition to bomber escorts, 65 also began sending pairs of aircraft out over France to attack targets of opportunity in what were called Rhubarbs'***

No.65 flew four patrols during the day and, as the fighting became more ferocious, it claimed two Do 217s destroyed for no loss or damage.

The OC damaged another for the last of his many successes in combat. This took his tally to 17 aircraft destroyed and five shared destroyed, 4½ probables and 12 damaged. Shortly after the Dieppe fiasco, 65 Sqn moved to Gravesend, Kent, where on September 1, Cdt René Mouchotte, a Free French officer, assumed command. After a brief period at Lympne, south of Dover, the squadron moved north to Drem, Scotland, in October from where it began a course of dummy deck landings followed by practice landings on the carrier HMS *Argus* in January 1943.

To the great relief of the pilots, a change of plan saw 65 continue coastal patrol flights from Drem and remain UK based.

### TACTICAL AIR FORCE

In late March 1943, 65 Sqn went to Perranporth, Cornwall, as part of 10 Group and flew its first operation from there on April 2. Fighter sweeps became the norm, but little was seen of the Luftwaffe.

In mid-May the squadron moved to Fairlop, Essex, as a mobile unit of 83 Group, which would eventually form part of the 2nd Tactical Air Force. It trained hard for the rest of the year, often living under canvas, in preparation for the coming invasion of France.

Sweeps and 'Rhubarbs' remained the main tasks, but by now the Spitfire Vb was increasingly outclassed and it was with some relief that in August the squadron was re-equipped with Spitfire IXs.

With its potent new mounts, the squadron's 'score' soon began to rise once more and it was with the Spitfire IXs that 65 became a founder unit of the 2nd TAF when it formed on November 1.

By this time it was at Gravesend and formed 122 Airfield (later Wing) with 19 and 122 Sqn. The main task now was escorting 2 Gp and US 9th Air Force medium bombers in raids over France, Belgium and the Netherlands, though there was little interference from the Luftwaffe.

The Wing was scheduled to receive the Mustang III and 65's first one arrived on December 22 and by the end of January 1944 the squadron was operational with them.

It had flown the Spitfire with considerable success for almost five years and the bulk of its claims by the end of the war for 119½ enemy aircraft destroyed had been made while flying them.

The cost had been high, but it was a record of which the squadron was justifiably very proud, fully living up to its motto 'By force of arms'.

Soon after the war, 65 re-equipped with Spitfire LF XVI. It led a somewhat nomadic existence for the next few months, but eventually settled at Horsham St Faith, near Norwich, in March 1946.

In early August, it moved again to Linton-on-Ouse, North Yorkshire, where it re-equipped with the superb twin-engined de Havilland Hornet and 65 Sqn's long association with the Spitfire was ended... almost.

Many years later, when 65 was flying the supersonic swing-winged Tornado F3 at RAF Coningsby, Lincolnshire, one of the Spitfires of the co-located Battle of Britain Memorial Flight was displayed for some time in the squadron's wartime markings.

No.65 Sqn had come full circle. **AN**

**Flying Spitfire Vb BM365/YT-N over Dieppe on August 19, 1942, Sqn Ldr McMullen damaged a Dornier 217 bomber. via M W Payne**



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# SERVING THE ROYAL FAMILY

**Charles Woodley** details the different aircraft that have flown the Royal Family around the globe through the decades.

A short journey from the Yorkshire coast to Norfolk in the late 1920s began the era of official royal flights. Prince Edward, the Prince of Wales was flown from Scarborough racecourse to RAF Bircham Newton, which is fewer than 10 miles from the monarch's Sandringham Estate.

He was already a keen aviator, having taken his first flight in 1916 and was awarded RAF pilot's 'wings' in 1919.

However, the Queen's Flight of the RAF can be traced to the journey he made along the east coast on May 27, 1928. The Prince had gained authorisation for Bristol F2B J8430 to be allocated for 'special duties', which included transporting the heir to the throne.

In the years that followed, he acquired a variety of aircraft for personal use and appointed Edward H 'Mouse' Fielden (who would later receive a knighthood) as his full-time, personal pilot. The aircraft included a

DH60M Gipsy Moth, a DH Puss Moth and a DH Fox Moth, all painted in the colours of the Brigade of Guards.

For official royal visits, he was still required to travel in RAF aircraft, but it was around this time that his personal aircraft began to be referred to unofficially as the 'Royal Flight'.

These aircraft were disposed of and replaced by more modern types including a Vickers Viastra, DH84 Dragon and DH89A Dragon Rapide.





**A BAe 146 of 32 (The Royal Squadron).** Niall Paterson

## KING EDWARD VIII

On January 20, 1936, King George V died at Sandringham, and the Prince of Wales became King Edward VIII. Protocol required he attended a meeting of the Accession Council in London within 24 hours of the death. Train links from the royal estate to the capital were poor so the new King was flown south, becoming the first reigning British monarch to travel by air.

On July 21, 1936, Flt Lt Edward Fielden AFC was promoted to Wing Commander and performed the duties of captain of the newly created King's Flight. The current DH89 equipment was by then beginning to look dated, and its replacement by an updated aircraft type was considered.

Before a decision was reached, the country was shaken by King Edward VIII's abdication, before his coronation, on December 10, 1936. His brother Albert, Duke of York ascended to the throne as King George VI.

Evaluation of a new aircraft for the King's Flight continued in 1937, and after modifications, which included providing space for a radio operator and his equipment, Airspeed Envoy III G-AEXX was handed over and the Dragon Rapide disposed of. ▶



**Airspeed Envoy III G-AEXX** was owned by The Air Ministry for use by the Prince of Wales (later King George VI). It wears the Brigade of Guards colours, which were applied to each successive aircraft he used. The Aviation Photo Company



**De Havilland DH95 Flamingo G-AGCC** was issued with the RAF serial R2766, but flew with its civil registration applied over camouflage markings during short service with the King's Flight. Key Collection



**In 1946 the King's Flight was reconstituted with a fleet of four Vickers Vikings, and the type was used throughout a royal tour of South Africa in 1947.** Key Collection



**A nose detail shot of a Viking showing the royal insignia beneath the cockpit windows and the Royal Standard flying from its mast above the flight deck.** Key Collection





Two Westland Whirlwind HCC.8s were delivered to the Queen's Flight in November 1959, and served until replaced by turbine-engine models. The Aviation Photo Company



RAF Germany DH Heron C.4 XR391 still retained its former royal colours when at Berlin Templehof Airport in June 1971. At the end of that year it went to Saunders Aircraft for conversion to ST-27 turbo-prop standard. Ralf Mantufel



An RAF DHC Chipmunk T.10 in Queen's Flight livery with a royal Andover in the background. Chipmunks were used by the Duke of Edinburgh and Prince Charles for basic flying training. The Aviation Photo Company



A Wessex HCC.4 in distinctive royal livery. The type carried out the Flight's last royal flight on March 31m 1995, transporting Princess Margaret from RAF Benson to Windsor. Key Collection

World War Two was looming when, on August 4, 1939, Lockheed Hudson N7263 was allocated to the Flight, and converted for royal use. This included fitting six parachute seats, converting the bomb bay to carry luggage, and additional fuel tanks. Two RAF wireless operators/air gunners were posted to serve as gunners on this Hudson, and on another used for six months; these two were the only King's Flight aircraft to be armed.

A DH95 Flamingo transport was also delivered to the Flight on September 7, 1940, at RAF Benson, Oxfordshire. Although the Flamingo had been allocated an RAF serial, it flew with the civil registration G-AGCC in addition to its RAF roundels and camouflage paint – a move intended to smooth its passage through neutral airspace if the royal family had to be evacuated from the UK.

The King's Flight was disbanded in February 1941 and its aircraft and personnel took on other RAF duties.

In June 1943, Gp Capt Fielden, as he had become, was asked to advise on a suitable aircraft for a long trip the King was proposed to take to North Africa. It was decided to use Winston Churchill's personal Avro York LV633 *Ascalon* for the journey, which the King undertook under the codename of General Lyon.

## FLIGHT RE-FORMED

Post-war, the King's Flight was officially re-formed at RAF Benson, Oxfordshire, on May 1, 1947 and was equipped with the more modern Vickers Viking.

The wedding of Princess Elizabeth and Prince Philip in November 1947 kept the King's Flight busy, bringing guests to London from Europe. The following spring there was a lengthy royal tour to South Africa.

The King George VI and Queen Elizabeth and their entourage travelled there and back by sea, but an extensive itinerary of visits within the country was entrusted to a fleet of four Vikings. The royal couple used VL246 and VL247 as their personal aircraft, VL245 was designated as a staff transport, and VL248 was fitted as a travelling workshop, with a workbench and a comprehensive range of power and hand tools to rectify snags on any of the aircraft.

The royal Vikings were furnished with two, four-seater saloons, a steward's compartment, and a commodore's compartment immediately behind the flight deck. The staff transport was laid out in a manner similar to airline Vikings, but with 20 seats – there were slightly more in commercial service.

The tour was successfully completed in April 1948, with more than 160,000 miles (257,495km) covered in the air.

It became customary for the royal family to spend their annual summer break at Balmoral Castle in Scotland, and in 1947 Viking VL245 was allocated to transport their mail back and forth between London and Aberdeen. Shortly after take-off from Aberdeen on September 2, 1947 the aircraft experienced engine problems and the crew made a forced landing



in a field. After touchdown, the aircraft struck a stone wall and was damaged beyond repair.

A royal tour to Australia and New Zealand, was scheduled for the end of 1948 and a further Viking was acquired, but the ill-health of King George VI caused it to be postponed indefinitely.

Princess Elizabeth and the Duke of Edinburgh set off on January 31, 1952 on what was planned as a five-month tour of East Africa, Australia and New Zealand. They were seen off at London Airport (now Heathrow Airport) by the King and Queen, but while in Kenya news reached them that King George VI had died.

The couple returned home on the same BOAC Argonaut aircraft that had taken them away, and on June 7, 1952 the new Queen Elizabeth II disembarked at London to take her first steps on British soil as monarch. Her coronation took place on June 2, 1953, and the King's Flight was renamed the Queen's Flight.

As 1953 drew to a close, consideration again turned to acquiring state-of-the-art aircraft. The Vikings were in excellent condition and 'low houred' by airline standards, but it was considered bad for the country's image if the monarch was seen travelling in anything but the most up-to-date, British-built aircraft.

Earlier in the year, the postponed tour had taken place and, while the Queen and Duke were in New Zealand, they had taken internal flights in an airline-operated de Havilland Heron, a type that would in later years become a familiar sight in Queen's Flight livery.

Also in 1953, the Flight acquired its first helicopter, a Westland Dragonfly HC.4. However, the first royal flight in a helicopter did not come until April 1955, when Queen Elizabeth, the Queen Mother was taken by a Westland Whirlwind, from Smith's Lawn at Windsor to RAF Biggin Hill.

It was later announced that the Queen's Flight would acquire three new helicopters,



**One of the A109Es used by 32 (The Royal) Squadron over Buckingham Palace.** Crown copyright 2006

but for various reasons it was three years before this came about. At the time, there were few types to choose from until the S-55/Whirlwind came along.

In May 1955, DH Heron C.3 XH375 was detached to RAF Benson for use as the personal aircraft of the Duke of Edinburgh, who had gained his pilot's 'wings' in May 1953 after training on Chipmunk, Harvard and Airspeed Oxford aircraft. On completion of his type conversion course, the Duke began to fly the Heron on journeys within the UK.

One of the Vikings was sold, but the rest were kept busy for some years and in March 1958 it was revealed the remaining Vikings were to be phased out and replaced by two Heron C.4s. It was in one of these aircraft, XM295, that the Queen and Duke arrived at Gatwick on June 9, 1958 to perform the official opening of the new airport complex.

## QUEEN MOTHER

In November of the following year, the new helicopters for the Queen's Flight were delivered: two Westland Whirlwind HAS.7s, modified to VVIP configuration as Whirlwind HCC.8s.

The internal alterations reduced the seating capacity to four, with two seats for royal passengers and two for equerries, whose seats could be adjusted to face fore or aft. In the coming years, the Queen Mother would become a regular user of the Whirlwinds, even flying out to the aircraft

carrier *Ark Royal* in one.

At the end of the 1950s a review of the work of the Queen's Flight during that decade was published showing it carried out around 600 hours of flying each year, with the bulk during the summer months.

During the summer of 1961, an additional Heron C.2, XR391, was taken on charge, as was Chipmunk

T.10 WP903, which was used over the next three years to provide flying instruction for Prince Michael, Prince Richard, and the Duke of Kent. It was then placed into storage, but was to return to service in the summer of 1968, the pilot under instruction this time being Prince Charles.

In the early 1960s all Queen's Flight aircraft were repainted fluorescent red overall with a blue cheatline to improve their visibility to other air traffic.

## ANDOVERS

Discussions about eventual replacements for the Herons began, and in 1964 two HS748 Andovers were taken from a batch of six on order for the RAF and suitably modified for royal use.

In mid-June 1964 the two piston-engined Whirlwinds were replaced by a pair of turbine-powered Whirlwind HC.10s upgraded to the VVIP HCC.12 standard. The first of the Andovers, designated CC.2s, were delivered in July and August the same year in a revised Queen's Flight livery, with the red finish applied only to the fin and rudder. They would cruise at around 100mph (161km/h) faster than the Herons, and their Rolls-Royce Dart turboprops provided a smoother ride for the royal occupants. The interiors were reconfigured with an executive suite and a small forward cabin for use by staff.

The Queen's Flight suffered its first fatal accident on December 7, 1967. Whirlwind XR487 was on a ferry flight from Benson to the Westland works at Yeovil with a crew of four. There were no passengers. ▶

**One of three Andovers used for royal duties. The first was taken on Charge in July 1964, and three were eventually operated, replacing Herons.** Crown Copyright





While flying at a height of around 500ft, the rotor shaft snapped, causing the helicopter to plunge to the ground. All on board were killed, including the then Captain of the Queen's Flight, Air Commodore J H L Blount.

In 1968 plans were well advanced to replace the remaining Whirlwinds with twin-turbine Westland Wessex helicopters. Two Wessex HCC.4s were delivered during 1969, with nose modifications and flotation gear fitted. In 1968 another Andover was added to the fleet, allowing disposal of the remaining Herons.

By August 1970, the Queen's Flight consisted of six aircraft and helicopters and around 140 personnel, including 24 aircrew, the stewards, and crew chiefs responsible for servicing the aircraft when away from Benson. The premises at Benson were completely self-contained, with a catering department which prepared the in-flight meals, and a flag store where the royal or presidential standards of every country in the world were kept, ready to be hoisted from a fitting above the navigator's station whenever a Queen's Flight aircraft landed overseas. The cost of maintaining the Queens Flight was estimated at around £450,000 per year (about £6.8m at today's prices), with it being noted that 40% of the flights operated carried government ministers and other non-royal passengers. For some time, consideration had been given to replacing the Andovers with newer jet equipment, as used by many other heads of state.

In 1972 the Air Board approved an order for two BAC One-Elevens, only to be overruled by the Conservative government of the day. The issue was raised again in 1977 but again failed to get the green light, this time from a Labour government.

Three years later the Queen's Flight was set to obtain new aircraft. At the time it seemed likely two BAC One-Eleven Srs 475s would be ordered, as the HS 125, Jetstream, and BAe 146 had all been ruled but after further deliberation, and more than 800 hours' evaluation of two leased BAe 146s by the RAF, it was announced that this type had been selected at a cost of £32.8m. In the end, there was no order for the One-Eleven. The new aircraft replaced two of the Andovers, which were by then almost 22

## THE QUEEN'S HELICOPTER FLIGHT

The Royal Household placed a ten-year contract in February 1998 with Sikorsky Aircraft Corporation and Hanson Helicopters for a Sikorsky S-76 and crew based at Blackbushe Airport, Hampshire. Sikorsky S-76+ G-XXEA entered service on December 21, 1998.

It was to be used by the Queen and other nominated people. A saving of around £1.8m per annum, compared with continued operation of the two Wessex then on strength, was anticipated. In November 2009, the original helicopter was replaced by S-76C++ G-XXEB, which was purchased by the Royal Household.

In 2013, following concerns over civilian standards of operation, the Royal Household announced that only pilots from the armed forces would crew the leased helicopter on future royal flights.

The operating base for what is called The Queen's Helicopter Flight was switched from Blackbushe Airport to RAF Odiham in Hampshire. In 2014 the S-76C++ was supplemented by an AW109S, G-XXEC, also bought with Royal Household funds.

years old and would be re-allocated to 32 Sqn at RAF Northolt for general transport duties.

The third Andover was retained, to provide operational flexibility. The final sortie of an Andover in royal service took place on December 21, 1990, when XS790 carried the Queen and the Duke of Edinburgh from Heathrow to RAF Benson.

The BAe 146 offered almost twice the speed and range of the Andover. Designated as the BAe 146 CC2, but sometimes referred to as the BAe 146 Statesman, the two jets were delivered in May and June 1986, with a third example added in 1990. They were furnished with a specially designed Royal Suite cabin. On June 29, 1994 one of these aircraft, ZE700, ran off the end of the runway at Islay in the Hebrides after a flight from Aberdeen with the Prince of Wales on board. The aircraft was badly damaged but there were no injuries.

## ERA ENDS

The Queen's Flight era came to an end on March 31, 1995 when Wessex XV732 transported Princess Margaret from RAF Benson to the grounds of Windsor Castle. The following day the Flight and its BAe 146 CC2 and Wessex HCC.4 equipment was

merged into 32 Sqn to become 32 (The Royal) Squadron, based at RAF Northolt.

The first royal flight undertaken by the new unit happened the same day, when BAe 146 ZE701 carried Prince Edward from RAF Northolt to Istanbul, Turkey.

The RAF's provision of dedicated VIP aircraft for the use of the royal family was now at an end. From then on, any use of RAF aircraft would be charged to the Royal Household on an agreed scale.

The position of 32 (The Royal) Squadron was further clarified in 1999, when the Ministry of Defence stated its "principle purpose . . . is to provide communications and logistical support to military operations. The squadron's capacity should be based on military needs only; and any royal or other non-military use of . . . spare capacity is secondary to its military purpose".

In 2004, concerns over possible terrorist actions led to the equipping of the 146s with missile countermeasures, and the aircraft were repainted in a more airline-style livery, losing the distinctive red markings inherited from their Queen's Flight service.

Since 1995, the aircraft of 32 (The Royal) Squadron have seen overseas service in several conflicts, including those in the Gulf, Afghanistan and Iraq. On April 1, 1997 responsibility for financing royal travel was transferred to the Royal Household. Prior to that it had been shared between various ministries, including the MOD, Department of Transport and the Foreign and Commonwealth Office.

The squadron has also utilised the A109E which were replaced and the unit now has a single AW109SP GrandNew – both have been used for royal duties occasionally in addition to the fixed-wing aircraft.

In November 2015, it was announced that RAF A330 Voyager ZZ336 was to be refitted for use by members of the royal family, the Prime Minister, and government officials, although it would still retain its primary tanker capability. Its first VIP use came on July 8, 2016 when it carried Prime Minister David Cameron and government ministers to a NATO conference in Poland. Wherever practical, members of the royal family now use scheduled airline services.

The Royal Family also now fly in two civilian registered helicopters (see panel). **AN**

### One of two helicopters used by The Queen's Helicopter Flight.

www.AirTeamImages.com/Darryl Morrell





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# CLOSE ENCOUNTERS

Fast jet pilot **Steve Gyles** had an eventful 25-year career in the RAF that included flying the Lightning, Phantom and Tornado GR1.

**T**he squawk box in the Quick Reaction Alert (QRA) shed crackled. I jumped out of my chair as I knew what was coming next, but was surprised by the alarmed shout: "Leuchars, this is Buchan, alert two Lightnings and as many more as you can generate. We have 80 contacts rounding the Norwegian North Cape."

Within five minutes I was airborne, heading north. The other aircraft had only recently landed from a scramble and, with Flying Officer Graham Clarke at the controls, followed ten minutes later, along with a tanker. For the next three hours I did not need radar to see the Soviet aircraft. At one point I was with a four-ship of *Badgers* when a shadow went over the canopy. I looked up to see

another four-ship of the same type pass over on a 90° crossing. There were many more *Bears* and *Badgers* visible to the eye. At one stage, I asked the radar controller for directions to the tanker, and he replied that he didn't know because there were more than 40 contacts on the same heading in my immediate area. In all, I made ten intercepts and saw another 30 to 50 aircraft.





Left: **The author flying past Devils Tower in Wyoming, instantly recognisable from the 1977 film *Close Encounters of the Third Kind*, in a 27 Sqn Tornado GR1. This sortie took place after he had taken part in a USAF Strategic Air Command bombing competition.** H T Cook

Above: **Steve Gyles in the cockpit of a Tornado GR1 in 1985.** Crown copyright 1985



the time I went to the Lightning Operational Conversion Unit (OCU), I was the only one to make it to that aircraft from the initial 60. Mind you, it is worth noting that a future BAE Systems chief test pilot was also on my entry course, as was a future Vulcan captain who flew the first bombing mission during the Falklands War.

Two years and nine months after joining, I arrived at the Lightning OCU at RAF Coltishall, near Norwich.

What an awe-inspiring aircraft; so large, so powerful compared with all that had gone before. How could I, a 21-year-old, possibly fly that? Yet, after three weeks of ground school, simulator rides and four dual sorties I was let loose. It was like stepping out of a Ford Ka and into a Mercedes Formula 1 racing car.

## OPERATIONAL

On November 4, 1968, I arrived at RAF Leuchars near St Andrews, Fife, Scotland, to join 11 Sqn, flying the Lightning F.6. Was I welcomed with open arms? Well, no, not really.

Barely two years earlier, a pilot had required 1,000 hours' experience to fly the Lightning. I had barely 300 when I first sat in one. Many of the squadron commanders were against this dilution of experience, doubting our ability to handle the complex aircraft. I was told in no uncertain terms I would be monitored very closely and get just one chance to prove myself.

It was hard work in the early days, but most rewarding, including a month's squadron detachment to Singapore, where I flew a few work-up sorties.

At the beginning of June 1969, the boss made me operational: I had made it. From that day onwards, I became part of the normal squadron routine. We shared QRA with 23 Sqn on monthly rotation.

During the duty month, a first 'tourist' could expect about seven stints of 24 hours' duty on ten minutes' readiness. Two pilots and two live-armed aircraft were always on standby and there were scrambles every week.

The other Lightning tallied seven intercepts and even the tanker managed three.

The Soviets certainly put on a massive maritime/air exercise, which marked the 100th anniversary of Lenin's birth on April 22, 1970. In that month our squadron flew almost all its allotted hours on QRA.

## SIGNING UP

I was 18 when I was accepted for RAF pilot training. Sixty of us arrived at RAF South Cerney, Gloucestershire, on September 1, 1965 as pilot officers to start our induction. The training process took me through basic officer training, followed by elementary flying in the Chipmunk.

Then it was up to RAF Syerston, Nottinghamshire, for the basic flying course on the Jet Provost. On completion, I was awarded my 'wings' and posted to the fighter route for advanced flying on Gnats at RAF Valley, Anglesey, followed by tactical flying and weapons delivery on the Hunter at RAF Chivenor, Devon.

The failure rate was about 10% on almost every training course I went through. By

During my time on the squadron I was scrambled about 12 times; intercepted 22 Soviet bombers (including the ten mentioned earlier) and saw around 50 more at a distance.

Each pilot was allocated one missile per tour to fire at the Missile Practice Camp (MPC) at RAF Valley. Mine was the Red Top.

It was most satisfying seeing it home onto the Jindivik-towed infrared (IR) flare – bullseye! Detachments on a UK air defence squadron at the time were few. Once in the tour you could expect to go on a half-squadron exchange within NATO. However, towards the end of 1969, I was sent to 5 Sqn to ferry one of its aircraft for its Singapore detachment. I did the first leg, half at night, from RAF Binbrook to Oman, an 8½-hour sortie. It was my longest trip ever in a fighter. The airframe I flew now stands on a plinth at BAE Systems facility at Warton, Lancashire. My final detachment was a month long to Malta, then Cyprus where the squadron provided air cover for the Royal Navy.

## JAMMED CONTROLS

I never suffered an engine fire, all too common in the Lightning. My 'speciality' was jammed controls. The first was when I was about to release the brakes for take-off. Then uncommanded and without warning the control column went fully forward. With the tailplane now in the down position ruling out the possibility of taking off safely I reduced the engine power and taxied back for the aircraft to be inspected. I was extremely lucky. They found a foreign object had jammed a valve in the tailplane actuator. Even luckier was the previous pilot. He had just performed an aerobatics sequence over the airfield.

As the flow of first tourists increased, I was warned to expect a ground posting for my second tour. So it was that in early 1971 I was posted to RAF Gütersloh in West Germany as a simulator instructor on the Lightning F.2A for 19 and 92 Sqs, ▶





A photo taken by the author while shadowing Soviet *Bear* on April 22, 1970 while flying an 11 Sqn Lightning. Also keeping an eye on the Tupolev is another Lightning from the same unit and a Victor tanker. This was one of ten Soviet aircraft he intercepted that day during a massive exercise held to mark the centenary of Lenin's birth. Steve Gyles

with the rank of flight lieutenant. Mind you, every cloud has a silver lining; the '92' guys checked me out in the F.2A and fitted me into their flying programme whenever possible. There was a trade-off of course. They expected me to be kind with them on simulator trips.

By good fortune, I was in an excellent position when an unexpected vacancy came up on 19 Sqn. With one day's notice I was transferred and my three-year RAF Germany posting was extended by six months.

Two months later I was operational and back on the QRA roster again, or Battle Flight as it was called. The readiness was five minutes instead of the UK's ten minutes.

We were very slick, getting airborne from the crew room in under three minutes. Every day we launched both aircraft for routine border patrols; operational scrambles were additional, usually against civilian aircraft penetrating the forbidden border zone.

Although, on one occasion I was scrambled to the Aberporth weapons range

off Wales to fire a live Firestreak. The sortie lasted about 1hr 25mins and involved landing at RAF Valley after the firing to refuel.

It is an amazing sight to see a stock war round impact the target and the resultant massive dirty brown explosion.

Operating overland meant there were always plenty of NATO low-flying aircraft to be bounced, a massive change to the vast emptiness of the grey North Sea. I flew as much low-level as I did high-level back in the UK.



Above: The author with the 11 Sqn Lightning F.6 – equipped with Red Top missiles and overwing tanks, he flew into RAF Coltishall for the base's airshow in September 1969. via Steve Gyles

Below: A formation of 11 Sqn Lightnings, 12 Sqn Buccaneers and a 13 Sqn Canberra during a maritime exercise with the Royal Navy off Malta in 1970. The author is flying the Lightning nearest the camera. Crown copyright 1970



***“Leuchars, this is Buchan, alert two Lightnings and as many more as you can generate. We have 80 contacts rounding the Norwegian North Cape.”***

One evening, I flew in the T.4 right-hand seat to save having it strapped up for a solo flight. As we lifted off, we suffered an hydraulic failure. To cut a long story short, the weather worsened in the short time we were airborne and we landed on a flooded runway, crosswind out of limits and no brake 'chute. The overrun barrier was engaged at about 70kts, damaging the aircraft's spine. Quite an interesting experience, when I look back.

A year later, I led a four-ship to fire the cannons. Unfortunately, part of my starboard gun disintegrated. A chute, down which spent cartridges and links passed to a container, detached and pressed against a shroud protecting all three control rods in that area. The rudder rod was uppermost and was the most jammed and bent.

The aircraft spiralled down in a cloud and I was on the point of ejecting when



some jerky movement came back into the ailerons. Using both hands I recovered to controlled flight and brought the aircraft home in one piece, despite the hook jumping the approach-end arrestor cable and only having the left brake available.

Fortunately, the brake 'chute, combined with a crosswind from the right just kept me on the runway. I needed a stiff brandy after that one. It really shook me up. They awarded me a Green Endorsement, just one short of a medal of some sort.

In August 1974, I bade farewell to the Lightning having accumulated more than 1,000 hours. I was posted to the Tactical Weapons Unit (TWU) at RAF Brawdy in Wales, flying the Hunter. A delightful aircraft, but to be totally honest I did not relish the role, giving instruction in the two-seat T.7. I was always much happier in the single-seater, flying battle formation; combat; or chasing the students low-level to find out where they really went, rather than where they thought they went.

I had many opportunities to practise air-to-ground weaponry. Another part of the job that I enjoyed was training army forward air controllers (FACs). I would fly the unit's Jet Provosts during the FAC basic phase, progressing to the Hunter in the Brecon Beacons, South Wales, for the advanced training. But by far the best flying were the very frequent three-week detachments to Gibraltar where we kept three live-armed Hunter FGA.9s for QRA and reconnaissance. It was on one of those detachments that I fired all four cannons at once. The smell of cordite and the vibration was something to experience.

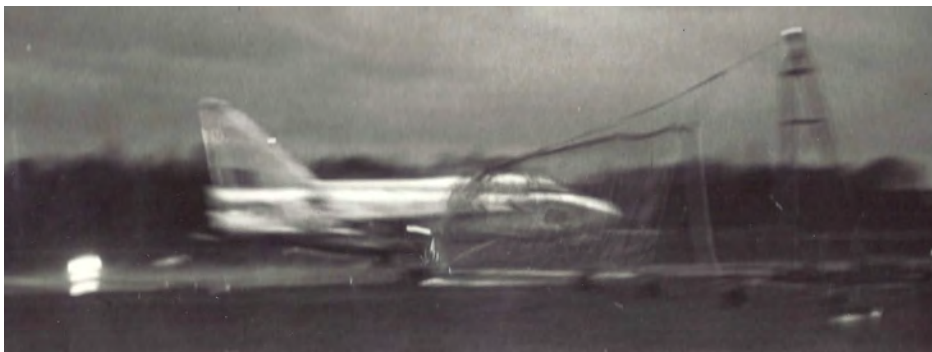
## PHANTOMS

In June 1977 I was posted to the Phantom at RAF Coningsby. My life-long dream was to fly on the Battle of Britain Memorial Flight and I saw this posting as a foot in the door. Unfortunately, having just finished my conversion, my posting was changed to



Above: **Flying a 19 Sqn Lightning F2A over the Mohne Dam in West Germany in 1973.** Tony Paxton

Below: **Entering the barrier at 70kts in 19 Sqn Lightning T.4, XM973, on November 20, 1972 after an hydraulic failure.** Crown copyright 1972



RAF Leuchars where 43 Sqn desperately needed an experienced pilot. My dream was shattered.

On my third sortie with them I had a massive control malfunction at high speed on take-off and both my navigator and I ejected.

I severely fractured my spine on ground impact, resulting in four months off flying. Other than that, it was back to air defence and the QRA routine much as it had been on the Lightning.

The Phantom was certainly a very capable aircraft; loads of fuel; great radar and plenty of weapons. It showed up the Lightning's deficiencies. However, it was not my favourite aircraft for handling.

As soon as you pulled hard in combat you had to centralise the aileron and rudder around turns, otherwise the aircraft would depart controlled flight. Our USAF exchange officer once described its high-level, subsonic handling as "...like balancing a ball bearing on the edge of a razor blade".

During that tour I intercepted another 17 Soviet bombers, fired the SUU-23/A gun; and fired a Sparrow missile. I never managed to fire the Sidewinder to complete the full set.

## TORNADO

My time was up with air defence and in February 1980 I was posted to the RAF's Handling Squadron at Boscombe Down. ▶

**No.63 Sqn staff of the Tactical Weapons Unit at RAF Brawdy in 1977. Steve Gyles is fourth from the left on the front row.**

Crown copyright 1977





A pair of 43 Sqn Phantoms standing QRA at RAF Kinloss in 1979 while the runway at RAF Leuchars was being resurfaced. Aircraft XV585/P in this photo was assigned to the author and had his name on the canopy rail. Steve Giles



Ostensibly it was a ground tour, writing the aircrew manuals, handling notes, cockpit checklists and emergency procedures. However, the terms of reference allowed me to fly my project aircraft – the Jet Provost, Phantom and Tornado GR1.

I regularly flew the first two but the Tornado was still to enter service. However, British Aerospace (later BAE Systems) agreed that I could fly it. Unfortunately, the Aircraft Development and Production Management Agency (NAMMA) for the three nations said otherwise. Nevertheless, it was a most interesting tour.

I spent a large portion of my time with the Tornado test pilots and navigators, flight test engineers and technical publications departments of all three nations – UK, Germany and Italy. By the time the aircraft entered service at the end of 1981, I knew more about the aircraft than any other RAF pilot. I was, therefore, in an excellent position to fly it when my tour ended in May 1982.

To be among the first 50 RAF pilots to fly the Tornado GR1 was very satisfying. I was posted to help form 27 Sqn, the third RAF Tornado squadron. Training was at the Tornado Trinational Training Establishment (TTTE) at RAF Cottesmore, Rutland. Only there could you, as an RAF pilot, fly with an Italian navigator in a West German aircraft. The RAF chose its crews from Buccaneers, Jaguars, Lightnings, Phantoms and first tourists. The Italians were very light on experience. My navigator throughout that course was an ex-submarine navigator.

In those early days, the Tornado had not been cleared to carry any external stores, or use its terrain following radar (TFR) in auto mode (hands off). These were phased in gradually and by the end of May 1983 our squadron had formed at RAF Marham, Norfolk.

It was an exciting venture for us all, operating out of hardened aircraft shelters in a new aircraft with aircrew of varying backgrounds but little experience on type.

During our work-up, we deployed to Oman and Saudi Arabia for a couple of weeks, flying the marketing flag for the UK. But, for the rest of the time, it was learning our new trade and the aircraft's capabilities, utilising the combined skills that each brought from previous tours.

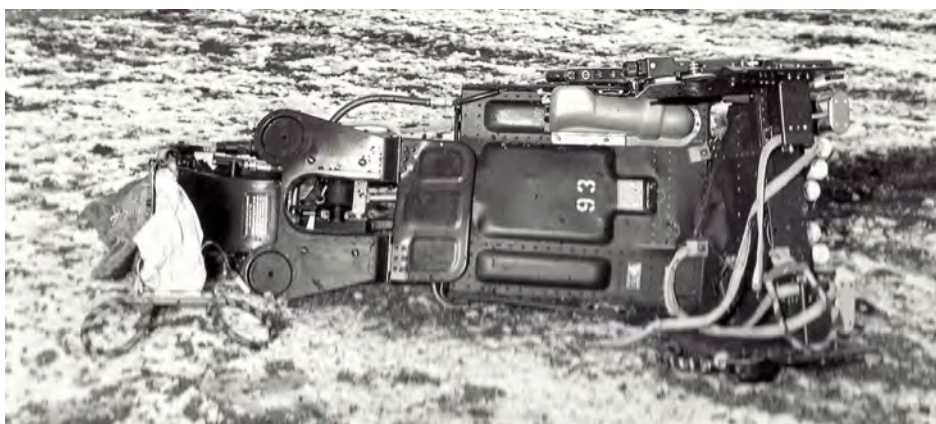
I well remember flying auto TFR at 250ft (76m) at night in cloud down the Welsh valleys, occasionally breaking cloud cover to see car headlights above on the hillsides. In 1985 I was one of six of the squadron's pilots, plus navigators, selected to compete in that year's USAF Strategic Air Command bombing competition (the RAF called the deployment Prairie Vortex). The task lasted six months, including three in the USA. The sortie profiles were about six hours each during which we saw much of the USA at both high and low levels. We went on to win all the trophies available to overseas contenders, beating the likes of the B-52 and F-111. It was a resounding success, repeating 617 Sqn's achievements of the previous year. Those successes were so important both for the RAF and British Aerospace, contributing greatly to the Royal Saudi Air Force (RSAF) Tornado procurement.

The bombing competition had effectively taken the squadron out of the NATO front line for six months. Upon return, numerous experienced officers were posted out and many first tourist crews came in. The wheel had certainly turned full circle from my arrival on Lightnings 17 years earlier.

The new boss, a navigator, chose me as his 'chauffeur'. From then on it was up the front of every 2/4/6 ship that he chose to fly in. He was an excellent crewman and leader and I always enjoyed flying with him.

At that time, I was also the air refuelling instructor and instrument rating examiner, so, when I was not leading I was in the back seat. It was a busy, and at times very stressful job. After two years, I was promoted to squadron leader but by then I could feel my flying days were numbered. I was frequently grounded because of my previous ejection injuries.

On one occasion the medical staff withdrew my flying category for more than three months. Following many discussions with the RAF career management staff,



Above and below: A flight control systems failure in Phantom FG.1 XV571/A during take-off at RAF Leuchars on November 21, 1977 forced the author and the navigator to eject. Crown copyright 1977





I moved across the airfield for my final two years before retirement. I was to be Squadron Leader Operations.

## GULF WAR

A 'wind down' tour it certainly was not. RAF Marham had two Tornado strike/attack squadrons and two Victor tanker squadrons. It was the prime strike/attack base in the UK and manned 24 hours a day. I had a large team under my command to co-ordinate the station operational activities.


I also planned all station exercises, so critical to maintaining the highest state of NATO preparedness. As an aside, I did manage to keep flying a few sorties each month with 27 Sqn, so there were some plus points to the job.

With one month to go until my retirement, Saddam Hussein invaded Kuwait. All hell was let loose. My boss was detached for other important duties and I was made acting OC Operations Wing with my retirement deferred until further notice.

In the following three months I worked closely with all the other station executives planning and executing the RAF Tornado GR1 deployment to the Gulf War. Marham became the centre for aircrew war work-up training. I watched the crews I had help train depart for the forthcoming war. They went on to fight with great bravery, but tragically one 27 Sqn crew was killed on the first raid and another crew was taken captive.

In November 1990, I left the RAF, having served for 25 years and three months. I went straight into the aerospace industry and was immediately sent out to the Gulf as an 'adviser' to RSAF Tornado operations.

It has always struck me as ironic that after 25 years' RAF peacetime flying I should end up in a war zone with a civilian company and be awarded the Gulf Medal. Such is life.

Oh yes, I will finish by saying I achieved my long-held dream and flew in a Spitfire in September 2017. Wonderful! 



Above: **Arriving at Thumrait in 1984 escorted by an Omani Jaguar. The purpose of the visit was to promote the Tornado.** Douglas Steer.

Below: **The welcoming party at Thumrait included a local tribesman and his camel.** Steve Gyles



**Refuelling from a Victor tanker while taking part in the Strategic Air Command bombing competition.** Steve Gyles





# CHINOOK ROTARY LEGEND

The Chinook is nearing four decades of service with the RAF and is set to serve for many years to come.

**Peter Cooper** profiles this versatile workhorse.

**M**ost of Britain's Chinook force is located at RAF Odiham in Hampshire, with a single squadron at RAF Benson, Oxfordshire.

The Hampshire base houses three Chinook units: 7, 18(B) and 27 Squadrons. RAF Benson is home to 28(AC) Sqn.

The new HC6 variant is operated exclusively by 7 Sqn and is tasked to support UK Special Forces, (the Special Boat Service and Special Air Service), as part of the Joint Special Forces Aviation Wing (JSFAW) and would likely be some of the first aircraft deployed to trouble spots when these capabilities are needed.

At present, 18(B) Sqn operates the HC4, HC5 and HC6A, with crews undergoing type conversion for the two latter variants. No.27 Sqn has the HC5 and HC6A variants, with all crews fully qualified on both Marks.

These are the main logistics units and will be tasked, when required, in heavy-lift, transportation, battlefield support, search

and rescue, and evacuation duties, in support of all branches of the British Armed Forces.

No.28(AC) Sqn has HC4 variants and is responsible for training, but will still be deployed if necessary for the transportation and battlefield support role.

The first UK Chinook order was placed by the Ministry of Defence (MOD) in March 1967 for 15 helicopters. They were intended to replace the Bristol Belvedere HC1s, but this commitment was cancelled in November 1967. It was a further 11 years before a firm order was made.

The MOD wanted 33 HC1s for the RAF, based on the CH-47C variant, to replace the Westland Wessex. The first, ZA670, made its first flight from the Boeing plant at Ridley, Philadelphia, on March 23, 1980. RAF operations with the Chinook HC1 started in December 1980 at RAF Odiham. The final example, ZA721, was delivered on June 8, 1982.





Three examples (ZA706, '716 and '719) were lost in one attack during the Falklands War when the requisitioned British merchant navy ship *SS Atlantic Conveyor*, carrying the helicopters, was hit by an Exocet air-to-surface missile, fired by an Argentine Navy 2 Escuadrilla Dassault Super Étendard, on May 25, 1982. The ship finally sank on May 30.

The fourth Chinook HC1 initially deployed to the South Atlantic was ZA718/BN, but this was away from the vessel undertaking supply missions to British ships at the time of the attack.

It was the sole heavy-lift helicopter in theatre and was greatly appreciated by the military for its extensive work in the islands during the campaign, although many troops 'yomped' miles to victory (marched with heavy equipment) because the three other aircraft were lost.

A further eight HC1s were ordered in 1983 to replace those lost in the South Atlantic and by other incidents of attrition.

## FLEET

All told, 72 Chinooks have been delivered to the RAF: HC1 (41 from new), HC2 (three new), HC2A (six new), HC3 (eight new for Special Forces use) and HC6 (14 new).

Upgrading the HC1s with glass fibre composite main rotor blades resulted in the HC1B, although they were all later returned to Boeing for further enhancements. These became the HC2 variant (equivalent of the US Army CH-47D) with improved Lycoming T55-1-712 engines, a re-configured, ergonomically-friendly cockpit to ease pilot workload, better electrical and avionics systems and installation of an advanced flight control system. The first HC2 conversion was returned to the RAF in 1993.

The six new HC2As ordered in 1995 were slightly different, in that they had a considerably strengthened forward fuselage to allow an air-to-air refuelling (AAR) probe to be installed.

The Chinook was allocated for Special Forces use, and the eight HC3s ordered in 1995 were built to the standard of the US Army MH-47E variant. They have an improved range, with larger fuselage side fuel tanks that, at 6 metric tonnes (6,000kg), double the fuel capacity of the rest of the fleet, making them ideal assets for long-range insertion tasks. Fully equipped night-vision sensors were fitted, along with

Top: **An 18(B) Sqn Chinook HC1 ZD981/BD in 1988.** The Aviation Photo Company

Left: **Chinook HC4 ZA710 undertaking under-slung load training at RAF Odiham.** Peter Cooper, unless stated

Right: **RAF Chinook HC2s from 1310 Flight taking off from Camp Bastion airfield in Helmand, Afghanistan.** Crown copyright 2011



improved avionics for navigation. Externally there is also a slight difference to the shape of the nose profile, as well as the larger, side fuel tanks.

Seven were delivered during 2001, (the eighth in April 2007 as it had been retained by the manufacturer for trials work), but remained in storage at MOD Boscombe Down for eight years because the avionics were not certified. As a result, the procurement received a 'bad press' at the time.

These examples were retrofitted and modified to the same avionic systems standard of the HC2/HC2A configuration, although retaining the HC3 designation. The first post-modification helicopter flew at Boscombe Down during July 2009 and all eight were put into RAF service between August 2009 and November 2010.

They have now been improved to the HC5 variant under Project Julius, with further upgraded avionics.

From 2008 a total of 46 HC2/2A variants were put through this programme, receiving more powerful Honeywell (Lycoming) T55-

714 engines and a comprehensive avionics suite upgrade with multifunctional displays (MFDs) replacing all the analogue flight instruments. This work was undertaken at Vector Aerospace, Fleetlands, Hampshire, and the aircraft became the HC4 variant.

The new digital flight deck is based on the Thales TopDeck avionics system with new primary flight and navigation displays (PFD/ND) as well as a mission management digital moving map display (FM/DMap). The HC4 has a night-vision capability thanks to the installation of a nose-mounted forward looking infra-red (FLIR) sensor. The FLIR turret can be removed if not required – the HC5 and HC6As also have the capability for FLIR installation. The first modified HC4 flew on December 9, 2010 and all were completed by 2016.

## FURTHER UPGRADES

It was announced in July 2017 that 38 of the HC4s will be improved to the HC6A variant; the first two (ZH892 and ZH894) returned to service with 27 Sqn during August. This modification, undertaken







by QinetiQ at Boscombe Down, involves installing a Digital Automatic Flight Control System (DAFCS), this is also on the HC5 and HC6. It replaces the older analogue system, which according to the crews, gives much better stability and eases pilot workload considerably. Externally there is no appreciable difference between the HC4 and HC6A.

Twenty-four new HC6 variants, (based on the US Army CH-47F), were ordered from

Boeing in 2009 but this was subsequently reduced to 14. These were built with a more rigid fuselage construction. Externally the HC6 has three pitot tubes (as does the HC5 and HC6A) mounted on the nose, whereas the HC4 has two, otherwise they are much the same in appearance. The first example (ZK550) was delivered to RAF Odiham during December 2013 and the last one (ZK563) was handed over to the RAF on December 16, 2015.



Twelve Chinooks have been lost in accidents over the years and a further three are in use as ground instructional airframes, leaving the force with 57 operational examples. All of the original HC1/2/2A variants have been modified to HC4 status whilst there are eight HC5s (modified from HC3s).

## VERSATILITY

The Boeing Chinook is a capable and versatile support helicopter that can be at home in many diverse environments, from the Arctic to the tropics. They can be armed with crew weapons, two General Electric M134 (7.62mm) six-barrelled rotary mini-guns mounted in the doorways, and a US Ordnance M60D (7.62mm) general-purpose machine gun, pintle-mounted on the rear ramp.

With its UV and Doppler Missile Advanced Warning System (MAWS), defensive aids such as infra-red jammers, radar warning receivers and chaff/flare dispensers, the Chinook is well equipped to look after itself. The large cabin can accommodate 55 troops, although 30 fully armed and kitted troops would be normal for battlefield insertion.

A total of 10 tonnes of freight can be carried internally or externally as an under-slung load. Operationally there are two pilots plus one or two crewmen dependent upon role requirement.

The helicopter has a maximum speed of 183mph (295km/h) and a service ceiling of 18,500ft, although crews do not routinely equip the oxygen needed to fly above 10,000ft.

To maintain currency on the type, the Chinook crews undergo continuous training covering general handling, under-slung load lifting, landing in confined areas, precise spot landings, troop insertion and extraction as fast as possible, low-level flying and landing on sloping terrain with only the rear wheels on the ground. Night flying is also high on the agenda where night-vision



Above left: **Multi-functional displays in the instrument panel of a Chinook HC4 upgraded from an HC2.**

Left: **The cabin of a Chinook HC4 showing the webbing seats and strengthened cargo floor.**





Above left: **Chinook HC3 ZH900** during **July 2010**, shortly after entering service, about to land at a FARP on Salisbury Plain during **Exercise Pashtun Dawn**, training for operations in Afghanistan. It is now an HC5 variant.

Above: **A Chinook HC5 (right) and HC4 on the flightline at RAF Odiham.**

Above right: **On the 27 Sqn flight line in late October 2017 – Chinook HC6A ZH893 had been upgraded in August.**

goggles are used and, in some cases, with all external lighting turned off.

Most of the load-lifting practice is carried out on base, where various items on the airfield – ranging from fuel drums and containers to an armoured personnel carrier and field gun – are used for these activities, giving the ground logistics crews valuable training too.

Most of the 'live' operations are carried out on the vast Salisbury Plain Training area (SPTA), 40 miles (64km) west of RAF Odiham. This dedicated range, owned by the MOD, covers 150sq miles (388km<sup>2</sup>) with



clear, low-level air space enabling many different disciplines to be performed for both helicopters and fixed-wing aircraft. In some cases, a near-live battlefield experience can be created. The larger area of the Army Training Estate Salisbury Plain (ATESP) takes in 300sq miles (777km<sup>2</sup>) and covers much of Wiltshire and parts of Somerset and Hampshire. This includes some 'no go' areas to civilians where there are live firing ranges. Most of the training for Operation Herrick (Afghanistan) was undertaken on the SPTA.

Although under-slung load lifting and 'circuit bashing' with a consignment is carried out back at base, the army also needs to hone its skills at getting equipment on board or as a slung load so it deploys logistics personnel to the SPTA to attach (hook-up) and detach (un-hook) to a low hovering Chinook. Forward Arming and Refuelling Points (FARP) can be set up in many locations to give the helicopters rotors-running refuelling as they would in a live battle zone.

Everyday maintenance is carried out by

RAF engineering ground crews, but there is a detachment of Boeing engineers on site at Odiham to help with any issues that may arise. Deep servicing is also done at Odiham with modifications performed at Vector Aerospace and QinetiQ.

The longevity of the Chinook fleet is down to the constant upgrading of avionics and systems to maintain versatility and state-of-the-art onboard equipment – the type has come a long way since the HC1s of 1981.

The versatile heavy-lift support Chinook is regarded as the main workhorse of the RAF rotary-wing fleet. Its capabilities have been called upon in many and varied battlefields over almost 40 years and it is set to serve for many years to come. **AN**

*The author wishes to thank the Centre of Aviation Photography for arranging the trips to RAF Odiham and the SPTA, along with the personnel involved at RAF Odiham – specifically the MCO and 27 Sqn for their valuable help.*



**A Chinook releases decoy flares whilst flying over Afghanistan in support of British troops in Helmand province in 2006.** Crown copyright 2006





Above: Typhoon FGR4, ZK308, received invasion stripes to mark the 70th anniversary of D-Day in 2014. It also wears the code 'TP-V' which was carried by Hawker Typhoon MN526 of 198 Sqn. The tail of ZK343 features special tail markings worn while it was flown by 29(R) Sqn's display pilot in the same year. [AirTeamImages.com/Philippe Noret](http://AirTeamImages.com/PhilippeNoret)

Right: This colourful scheme was applied by 29(R) Sqn for its centenary celebrations in 2015. [AirTeamImages.com/Kieron](http://AirTeamImages.com/Kieron)



Left: In 2015, Typhoon ZK349 was painted in a Battle of Britain-era scheme to commemorate the 75 years since the Luftwaffe's campaign and acknowledge the bravery and sacrifice of 'The Few'. The aircraft wore the markings of a 249 Sqn Hurricane flown by Flt Lt James Brindley Nicolson who was the only pilot of Fighter Command awarded a Victoria Cross during the battle. [Niall Paterson](http://AirTeamImages.com/NiallPaterson)

Below: No.6 Sqn celebrated its 100th anniversary in 2014 with these special markings. The unit rose to fame in 1942 as the 'Flying Tin Openers', following its success in the North African campaign using modified Hurricanes against the tanks of the Axis powers. [AirTeamImages.com/Philippe Noret](http://AirTeamImages.com/PhilippeNoret)







No.17(R) Sqn applied special tail markings to ZJ947 in 2013 to mark it relinquishing the role as the Typhoon Operational Evaluation Unit. This task passed to 41(R) Sqn while 17(R) Sqn moved to the US to undertake test and evaluation work on the F-35. Nigel Blake

Right: No.3 Sqn was one of the three founder squadrons of the Royal Flying Corps and included 'Larkhill 1912', the year and location it was established, in markings on its 100th anniversary jet in 2012. It also wears the unit's motto: 'The third shall be first' along the spine, a reference to No.3 Squadron, RFC, being the first to be equipped with heavier-than-air machines. Nigel Blake



Left: Stylish markings were applied by 11 Sqn to mark its 100th anniversary in 2015. Peter R Foster

Below: Typhoon ZK315 wears markings to highlight the 100th anniversary of 41(R) Sqn in 2016. The tail includes Battle Honours and the rudder features silhouettes of aircraft with significant unit history. On the canards are the first and third words of 41(R)'s motto 'Seek' and 'Destroy'. AirTeamImages.com/Ray McFadyen





# STEALTH FORCE

**A**n RAF Lockheed Martin F-35B Lightning II will come to a halt above the Royal Navy's newest aircraft carrier, HMS *Queen Elizabeth* off the US eastern seaboard in the autumn 2018. The pilot will engage the automatic landing controls and the aircraft will gently put down under the control of its lift fan. Once on the deck, the pilot will manoeuvre his aircraft into a parking spot.

The landing will be the climax of almost 20 years' work and an investment of nearly

£9bn in aircraft, infrastructure and people.

Bringing the F-35B into service with the RAF and Royal Navy has been the most costly and ambitious aerospace project in recent history. The UK government and aerospace industry has partnered with US counterparts to field Britain's first purpose-designed stealth aircraft.

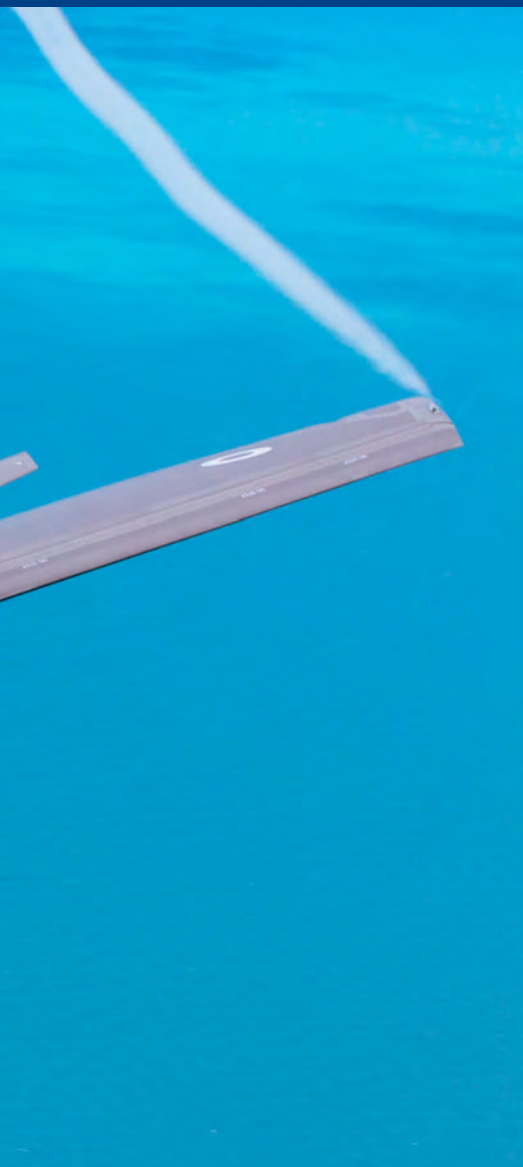
A revolutionary lift fan system has added another layer of complexity to the programme. On top of that, the F-35B procurement has been closely intertwined

The RAF F-35 fleet is steadily building up in the US and 2018 promises to be a big year for the Lightning Force. **Tim Ripley** charts the journey of the UK's new stealthy fast jet.

with the Royal Navy's £6bn next-generation aircraft carriers.

For two decades, the F-35 and two new aircraft carriers have been dogged by controversy over delays, cost overruns and uncertainty as to where they fitted into Britain's defence strategy. In June, HMS *Queen Elizabeth* put to sea for the first time and later sailed into her home port at Portsmouth Naval Base. Her sister ship, HMS *Prince of Wales* is due to be handed over to the Royal Navy in mid-2019.





## JSF ORIGINS

The story of Britain's involvement in what was originally known as the Joint Strike Fighter (JSF) programme began with early work by the Royal Navy to replace its old Invincible-class aircraft carriers. The first concepts were unveiled in 1997 in a bid to persuade the newly elected Labour government to approve them in its strategic defence review. The Fleet Air Arm and RAF would also need a replacement for the ageing Sea Harrier FA2 and Harrier GR7s then in service because they would not last the life of the new carriers which are projected to be use for 40 to 50 years.

The RAF was also looking to acquire a true stealth or low observable manned aircraft to augment its manned strike jets.

The Ministry of Defence (MOD) had already funded the then British Aerospace (BAe, now BAE Systems) to begin initial studies into future vertical take-off and landing (VTOL) aircraft and low observable technology. At the same time, the US military was also working on a family of aircraft that could eventually replace a large slice of the USAF, US Navy and US

Main photo: **The arrival of F-35Bs at RAF Marham in the summer of 2018 will mark the start of new era in British military aviation.** Crown copyright 2016

Top right: **Lightning IIs will form the strike element of the aircraft carrier HMS Queen Elizabeth. The Queen was due to commission her namesake vessel on December 7 at Portsmouth Naval Base.** Crown copyright 2017

Above right: **Delivery day for the RAF's first F-35B, ZM135, at Edwards AFB on January 13, 2015. The aircraft was assigned to 17(R) Sqn which undertakes operational testing and conversion.** Crown copyright 2015

Marine Corps manned tactical aircraft fleets. Pentagon chiefs wanted to replace six aircraft types – AV-8B, F-16s, A-10s, FA-18C/Ds, F-15Cs and F-15Es – with one common airframe, modified to carry out service-specific missions. By doing this, they hoped to curb the rising prices of combat aircraft.

The project's genesis also coincided with a surge of consolidation across the global defence industry. Many iconic aircraft companies of the Cold War era on both

sides of the Atlantic began to merge as orders dried up after arms budgets were slashed in the wake of the fall of the Berlin Wall in 1989.

The British government and BAE Systems were keen to join the new JSF project. The MOD saw the jet as a strong contender to fly from its new aircraft carriers. For BAE Systems, participation was a way to gain access to the lucrative US defence market. The British government believed it would help cement transatlantic defence co-operation. This was the era of Tony Blair, the UK Prime Minister of what was then called a New Labour government, and US Democrat President Bill Clinton the so-called 'third way', a political ideology. The mould-breaking JSF fitted the mood of the times.

Britain ultimately invested £2bn in becoming a Level One partner with a vote on the design specifications of the aircraft. BAE Systems in turn became a Level One partner with the prime contractor, Lockheed Martin, and was guaranteed around 15% of work on all the 6,000 aircraft that were envisaged being built over the life of the programme.



**A hovering F-35B – a reinforced landing pad is being built at RAF Marham to allow pilots to practise vertical take-offs and landings.**  
Crown copyright 2016

The Pentagon and BAE Systems invested hundreds of millions of pounds in constructing three large assembly and machine halls at Samlesbury in Lancashire where the rear fuselage assemblies for every F-35 would be built. This was a new concept in aircraft manufacturing.

The British government and BAE Systems secured a chunk of the global F-35 project in excess of the work that would have been needed to just build the aircraft required by the RAF and Royal Navy. The UK's aircraft are being assembled at Lockheed Martin's Fort Worth plant in Texas and they will have to be overhauled at the F-35 European regional maintenance centre to be set up in Turkey.

Britain also has limited ability to independently integrate new weapons, sensors and other systems into the aircraft without the approval of the US-design authority.

In effect, the UK has gained industrial participation and cost reductions through economics of scale, but lost a large degree of sovereign control of its own F-35B aircraft.

Once Lockheed Martin and its X-35 design had won the JSF contract in 2001, the project moved into the development phase to build a flying prototype and then production F-35 aircraft.

Everything about the programme is big. More than 3,000 are required by the US military and a similar number are projected for export, making it the largest non-civil aircraft programme of the 21st century. Just developing the aircraft has cost \$55bn and the initial production contracts are running at more than \$319bn. Keeping the global fleet of F-35s flying for 70 years is projected as costing more than \$1 trillion.

The UK's share of the F-35 programme also generates some massive numbers.

Last year (2017), the National Audit Office (NAO) estimated the cost of buying and operating the first batch of 48 aircraft would cost £5.8bn by 2024. When the development, support and infrastructure costs are included the price tag, as estimated by the NAO, is more than £9bn.

The sailing of HMS *Queen Elizabeth* from the Aircraft Carrier Alliance's shipyard at Rosyth, near Edinburgh, in June meant the UK project to regenerate its carrier strike capability had taken a major step forward. Out of the two new carriers, one is intended to be available to sail on operations on a 24/7 basis.

## US-BASED WORK

The air element of the carrier strike project has also been making progress but is still predominately based in the United States.

Once it joined the JSF programme as a Level One partner, the UK began to post military personnel to the US-led Joint Program Office (JPO) to oversee the development and then entry to service of the F-35. At first, the British people were involved in setting the requirements and design of the aircraft.

They then moved on to participating in flight testing and then operational test and evaluation. The former activity is carried out by UK military and BAE Systems' personnel of the F-35 Integrated Test Force (ITF) based at NAS Patuxent River, Maryland, and the latter is the responsibility of the RAF's 17(R) Sqn based at Edwards AFB, California. The UK's first F-35B was delivered to Edwards on January 13, 2015 and three UK jets fly from there.

So far ten UK production standard aircraft have been delivered to MCAS Beaufort in South Carolina, where the first batch of RAF and Royal Navy pilots and groundcrew are undergoing conversion training. It is expected that the first UK F-35 unit, the RAF's famous 617 'Dambusters' will re-form



**The RAF F-35B, which visited the Royal International Air Tattoo in 2016, takes on fuel en route to the UK. Note the Union flag in the cockpit.** Crown copyright 2016





**An F-35B over RAF Marham where the type will be based in the UK. Extensive work is taking place at the station in preparation for the arrival of the Lightning II.** Crown copyright 2016

in March, ahead of their return to RAF Marham in August.

This will be an event marked with huge symbolism as it will coincide with the 75th anniversary of formation of 617 Sqn for the famous Dams raids in 1943. It will also be just a few days before the RAF celebrates its 100th birthday on April 1.

Soon afterwards, 617 will begin preparing to ferry its jets across the Atlantic to Marham in Norfolk, where contractors are constructing new facilities that include a Maintenance and Finishing Facility, simulation centre and vertical landing pads.

Once back in the UK, crews will be working up for their first embarked test and evaluation cruise on HMS *Queen Elizabeth* in home waters during 2018.

While 617 Sqn is settling back into Marham – it previously flew the Tornado from the base – the carrier will cross the Atlantic to begin what are termed the First of Class Flight Trials (FOCFT) in October and November 2018. The FOCFT project will start with the carrier's deck crew becoming familiar with the jets, their noise and how they move around the deck.

The intensity of the trials will ramp up until aircraft and crews are conducting multiple flight cycles – launching and recovering jets during three-to-four-hour-long blocks – each day. These will involve day and night flying.

The first phase of the trials will concentrate on vertical landings and take-offs and then move onto the shipborne rolling vertical landing (SRVL) technique. Test pilots will be carrying out vertical

landings day and night, and in crosswinds. In the second phase they will be performing SRVL up to sea state five (rough), then crews will introduce stores and asymmetry into the trials. It is intended to split the tests into two, four-week-long periods, with time in port to rest the crew.

Once the carrier and crew have proved that the F-35B can safely operate from the deck, the aircraft will be granted a formal release to service to enable frontline squadron personnel to fly from the deck.

This will open the way for 617 to carry out the first full operational test and evaluation on board to prove that the carrier strike concept can work in practice. The successful conclusion will enable the Royal Navy and RAF to declare initial operating capability for the UK's Carrier Strike ability. Full operating capability is due to be attained in 2024. A maximum of 40 F-35Bs are envisioned to be embarked.

## LIGHTNING FORCE

To sustain the UK's Carrier Strike far into the future, the RAF and Royal Navy are establishing a dedicated organisation to operate Britain's F-35 fleet. Known as the Lightning Force, it comprises 60% personnel from the air force and 40% from the navy. A RAF air commodore heads the organisation, which sits under RAF Air Command at RAF High Wycombe.

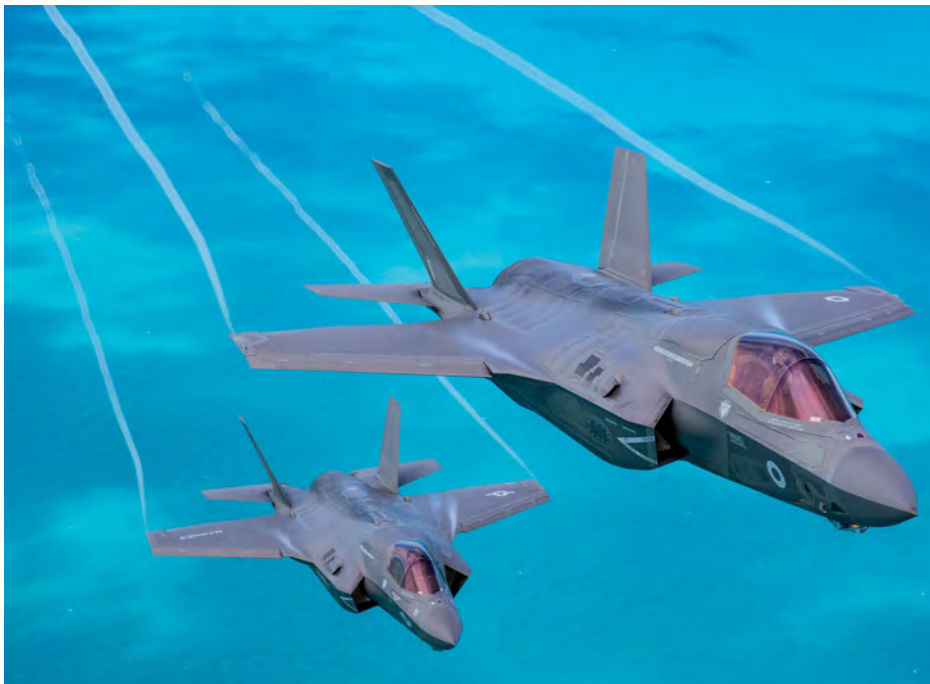
There will eventually be six main squadron-sized elements of Lightning Force, which will comprise mixed manning from the navy and air force. Officers from each service will take turns to lead, so although the squadrons will have titles and traditions drawn from the air force and navy, they will not be single-service units with separate chains of command.

It is the intention that the bulk of Lightning Force will be based at RAF Marham, but it is expected that most of 17(R) Sqn will



**Both RAF and Royal Navy personnel will make up the future Lightning Force on a 60:40 percentage split.** Crown copyright 2015





**An unusually blue North Sea forms a colourful backdrop for an RAF and US Marine Corps F-35B.** Crown copyright 2016

remain in the US to work alongside their US counterparts for several years. A British element will also remain at Patuxent River working in the ITF.

While 617 Sqn will be the first F-35B squadron to return to the UK, a roll-out for new units will follow with 207(R) Sqn standing up in July 2019 as the operational conversion unit. Its first task will be to train the next cadre of F-35B pilots to crew the second operation F-35 unit, 809 NAS, by April 2023.

The ambition is to have four frontline F-35 units, although the plans for the final two operational squadrons are still at an early stage. There is funding for the purchase of 48 aircraft until 2024. This breaks down to 12 for each of the frontline squadrons, of which one squadron will be embarked or held ready to embark on the carrier that is at high readiness for operations on a 24/7 basis.

Another dozen aircraft will be used for pilot conversion and groundcrew training in the UK and in the US. Out of the remaining aircraft, up to eight are expected to be undergoing overhaul at any one point and the balance will be kept in the US for test and evaluation.

The UK government has the long-term ambition to purchase 138 F-35 aircraft, which will provide the aircraft for the final two squadrons of the Lightning Force and then give the RAF a shore-based capability. These plans are not set in stone and there is no money in the MOD's long-term equipment plan to buy aircraft beyond the initial 48 aircraft before 2025.

RAF officers have expressed an interest in buying F-35A or F-35C variants for use from shore bases because of a better range and weapons payload than the lift-fan equipped F-35B.

The recent decision by the French and German governments to launch a project to build a next-generation manned combat aircraft could also potentially influence future RAF procurement plans, if the UK government decides to join the European partnership. There is unlikely to be enough money for the RAF to buy more F-35s, as well as a new European aircraft.

## NAVAL AIR POWER

While most attention has focused on the performance of the F-35B and the cost of buying the aircraft, the rebirth of the UK's Carrier Strike capability will no doubt lead to new thinking on how to use it.

There appears to be some debate between the RAF and the Royal Navy as to how airpower should be employed from the new carriers. Many naval officers see embarked air groups as an integral part of the carrier, with the aircraft and crews always sailing with the ship wherever it goes. This fosters unit cohesion and loyalty with crews drilled to peak efficiency in the demanding skills of flying from the deck of a carrier.

The RAF sees the Lightning Force as a national asset that needs to concentrate on honing its air warfare skills for high intensity air combat operations. That, say some senior RAF officers, is best done from shore bases and participation in major multinational exercises, such as Red Flag in the US, rather than being on an aircraft carrier for months at a time.

This argument has been swirling around for more than a decade and peace of sorts was brokered in 2012 by the then Defence Secretary Philip Hammond who instructed that "when deployed outside home waters, the new carrier[s] will routinely have Lightning II jets embarked with personnel from both Services".

With the countdown underway to the first landing of an F-35B on the deck of HMS *Queen Elizabeth*, it will soon be time to see how the jet performs for real. **AN**

**The UK intends to buy 138 F-35Bs, though pressure on the defence budget could see this reduced.** Crown copyright 2015





**RAF 100**

# Royal Air Force Annual Review 2018

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## FEATURING

### Reaper Reality

The Officer Commanding XIII Squadron, one of two RAF units flying the Reaper remotely piloted air system, talks frankly about the aircraft, its capabilities and how the RAF operates it.

### A Bright New Future

Introducing five new aircraft types – Juno, Jupiter, Phenom, Prefect and Texan, the UK's Military Flying Training System is starting its first ab initio course imminently.

### To The Ends Of The Earth

Wing Commander Ed Horne, Officer Commanding LXX Squadron, explains how the Atlas is excelling in the strategic transport role.

### A Tumultuous Year

Officer Commanding Battle of Britain Memorial Flight Squadron Leader Andy 'Milli' Millikin and ex-OC Squadron Leader Clive Rowley MBE RAF (Retd) look back on the Flight's 60th anniversary year.



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# GLASGOW AIRPORT A SCOTTISH SUCCESS

Glasgow Airport has undergone a renaissance during this decade. **Bernie Baldwin** learns about the initiatives that have created an award-winning operation.

**I**ncreased passenger numbers, more airlines, better infrastructure and... soft-toy tags have all played a part in helping put the fizz back into Glasgow Airport.

A long slide in users has been arrested through the implementation of a master plan created in 2011. So far, the results have been positive. A change of ownership to AGS Airports in 2014, after Heathrow Airport Holdings (formerly BAA) chose to sell Aberdeen, Glasgow and Southampton airports, caused negligible deviation from the plan. Commercial Director François

Bourienne joined the airport in 2010 and was involved in the creation of the 2011 master plan.

Bourienne said: "We started by totally redoing the international arrivals and revamping the check-in for the Commonwealth Games [held in Glasgow in 2014]. It was driven by customer experience and capacity issues. International arrivals was too small and the work [improved those]."

An extension to the eastern pier followed, increasing boarding capacity. Bourienne explained: "We had some remote stands

not far away, so by extending the pier, we managed to bring those into contact. That was important because it was at the time that we welcomed Ryanair and it matched their expectations in terms of operations." More remote stands, where aircraft can be parked during traffic peaks in July, were added. The two-year project cost about £8m.

## TARGET

Next on the agenda is the security hall, where capacity will be improved by 20%. "We currently have ten lanes and we'll go to



Wizz Air transferred its flights from  
Prestwick to Glasgow Airport in 2013.  
Kenneth Williamson



12," Bourienne continued. "We've already introduced parallel loading [of the belts] so that you can have four passengers [using it] at once."

Bourienne explained that a new pick-up/drop-off area opened in 2010 but, as passenger numbers have increased by 50% since then, a new one was created in May [2017] and is "working very well."

The increased traffic is helping the airport towards its forecast of just over ten million passengers a year by 2020.

"We are ahead of target," Bourienne declared. "Around 2006-07, we had just short of nine million passengers. Then we started a long slide and we reached 6.5 million in 2010. This year we should be at 9.9 million, so we should smash the ten million before 2020, depending on Brexit."



Above left: **Francois Bourienne, Glasgow Airport's Commercial Director, joined the company in 2010 and helped to create the 2011 master plan.** All photos Glasgow Airport unless stated

Above right: **Glasgow is Scotland's second busiest airport and since 2014 has been owned by AGS Airports, which bought it from Heathrow Airport Holdings (formerly BAA).**

An acceleration in business followed Ryanair's arrival at the end of 2014. It stimulated growth, especially because the carrier runs services between Glasgow and [London] Stansted, boosting domestic traffic significantly.

Ryanair currently operates 23 routes from Glasgow and provides around 15% of the total passenger numbers. Bourienne acknowledged; "In three years, it's quite

impressive. With the number of new routes started, they've given us what we wanted, which is a lot of cities. Ryanair are great to work with. They deliver what you want."

The rejuvenation of services since 2010 is the result of regular additions of airlines to the roster.

"From 2010, when we were at the bottom, we had Jet2 starting. They were backfilling for Globespan, which went bust in December 2009. Jet2 started with two aircraft and now has six based here. They provide around 10% of our traffic. From nothing in 2010, it has been quite tremendous."

Emirates increased its use of Glasgow in 2012 and in 2013, Wizz Air moved its routes from Prestwick to Glasgow and Eurowings began flying to Düsseldorf. Then followed Ryanair's arrival, and in 2015 WestJet





began a summer service from Halifax, Canada.

Bourienne said: "They did that cleverly. They had it in mind that if they started going to London, they'd need to go big in terms of scale. They weren't totally sure as to whether transatlantic was the right thing. That's why they picked Dublin–St John's and Glasgow–Halifax – doing it on more complementary routes, and learning the tricks. Then they went to London."

Air Canada in 2016, plus Delta Air Lines (both summer only) and Lufthansa in 2017 followed.

Bourienne added: "I would also underline that British Airways and easyJet have been

here for a long time and they have both treated us well."

When bmi stopped flying between Glasgow and London Heathrow in 2011, easyJet increased capacity on its London routes and has since started many international routes.

"They have increased the base flying, including upgauging some aircraft from A319s to A320s. They have above two million passengers a year, up about 20% from when they started."

Having acquired bmi, British Airways naturally increased its GLA–LHR frequency. "We get nine or ten flights a day to Heathrow. Also, BA CityFlyer increased quite a lot

between Glasgow and London City," Bourienne pointed out.

Cargo plays only a minor role at Glasgow Airport, mainly through goods transported in the belly of aircraft rather than dedicated freighters. The stands are close to the terminal meaning you would have landing and unloading in the middle of aircraft pushing back.

Business aviation services have grown, mainly as a result of Gama Aviation moving into a new hangar a few years ago. The other handling agent at the airport in this market segment is Signature Flight Support.

The airport is also home to the Scottish Air Ambulance.





Left: An overview of Glasgow Airport in 2008, before extension work began on the eastern pier (right).

Above right: Emirates celebrated ten years of operations at Glasgow in 2014 by flying an Airbus A380 to the airport on an established service normally flown by a smaller aircraft.

Right: Canadian competitors: Air Transat was joined at Glasgow Airport by WestJet in 2015, when the low-fare airline began services from Halifax, Nova Scotia.

Below right: Delta Air Lines is among the carriers that started services to Glasgow Airport in 2017. Kenneth Williamson

Below: Ryanair and easyJet combined provide more than 30% of the airport's annual passenger traffic.

## DEVELOPMENTS

Back inside the terminal, Bourienne explained the developments more pertinent to his commercial brief.

"We've renovated the whole retail space, increasing the duty-free shopping area by 40% in terms of square metres. We've pulled down a few shops to open up views of the runway, and created a few restaurants. We've made the customer experience better and the walkway more intuitive."

The airport introduced common-use self-service (CUSS) check-in machines a few years ago and is currently working with airlines to introduce self-service bag-drop.

"Usually, when other airports have introduced this, it is because they have capacity issues in check-in and it avoids using the check-in hall. In our case, since we have two check-in halls, we don't really have capacity issues but there are airlines like easyJet who want to get the same product in all the bases, which makes sense," Bourienne said.

The commercial director's biggest IT project, however, is just beginning. "It will be time soon to review which airport operating system [to handle information systems, gate allocations, coaches to stands, departure and arrival screens and so on] we are going to use and we start looking at the market for solutions. We expect to go live with a new system in 2020."

For many years Glasgow's main competition was Prestwick, about 30 miles (48km) away, but today Edinburgh is the rival.

Bourienne explained: "Edinburgh tends



to be successful on routes that are more inbound. Glasgow is a far bigger city, so we tend to be more successful on routes that are outbound. For instance, if you take the Gulf carriers, they find it hard in Edinburgh because it's tough to make money from October to June when it's winter, whereas Glasgow can fill two 777s easily all year round. But then, when it's easyJet and Ryanair [here] they have routes from regional France or regional Germany, where a Scottish person wouldn't go for a weekend. So mainly it's inbound driven [for those carriers] and usually Edinburgh is stronger."

Many airlines, such as Lufthansa, British Airways, easyJet, KLM, Air Canada, Delta

and United, serve both cities. There is a duplication of routes because of demand, but each airport usually sees a different profile in terms of passengers. "We tend to compete only when it's a thin route and you only get a demand for one airport in Scotland. So, say if we had a new route to China, I don't think there's enough demand to get a flight from both cities, so there will be competition."

"For the service from Halifax, WestJet looked at both cities and they knew that part of the traffic was about former emigration from Scotland to Canada. Therefore, they knew it was a west coast of Scotland market and not an east coast market," Bourienne said. ▶





Aviation is always striving to be a good neighbour and Glasgow Airport is no different. It works with the local communities on a number of initiatives, led by its involvement in a charity called FlightPath Fund.

Peter Carroll, the airport's Communications Manager, said: "We have four local authorities that fall in our flightpath area – Glasgow City Council, Renfrewshire Council and East and West Dunbartonshire Councils. The FlightPath Fund is set up to support community groups, charities and organisations in that area. It's been running since 2010 and to date we've given £1.3m to local groups."

The final total for last year (2017) has yet to be calculated, but it is expected to be £170,000. Grants range from £500 to £50,000 and can be awarded to environmental projects, community gardens, groups for pensioners, mothers and toddlers, and the disabled, and for special purchases such as football strips.

"The three pillars of the fund are education, environment and employment," Carroll said. "We meet every two months and go through applications to pick the best ones that suit the criteria. Myself and a colleague sit on the committee as trustees on behalf of the airport."

## ENVIRONMENT

Glasgow Airport holds an ISO 14001 certificate which specifies "the requirements for an environmental management system that an organisation can use to enhance its environmental performance."

Kevin Sinclair, the airport's Sustainability Assurance Manager, said no application had yet been made to join Airports Council International's Airport Carbon Accreditation Scheme. "However, our ISO 14001 auditor advised that we would comfortably achieve Level 2 and possibly Level 3 if we were to apply," he reported.

From caring for communities and the environment to caring for passengers, Glasgow Airport aims not to overlook anything. An initiative last September illustrated this attention to detail.

Carroll said: "We became the first airport, perhaps in the world, to introduce soft-toy tags. During the summer months we had quite a high influx of lost soft toys, with young children leaving them on aircraft or leaving



Above: **Glasgow Airport has two check-in halls, both of which were revamped in time for the 2014 Commonwealth Games.**

Bottom: **Part of the terminal and apron between the central and eastern piers.**

them in the terminal. So we decided we wanted to try to reunite them and introduced teddy-bear tags. Our check-in staff and our ambassadors hand out these 'Take care of my bear' tags, which are a bit like collars you'd have for dogs with 'My name is ...; I belong to ...; if I am lost contact ...'.

"It is a story that goes to the very heart of Glasgow's unique customer experience. We weren't quite sure how it would take off, if you'll pardon the pun, but it went worldwide. I ended up doing interviews with Japanese breakfast TV and German breakfast TV. Our customers loved it."

The idea came to Carroll when his own son lost his toy on holiday a year ago. "We lost it for three hours and it was the longest three hours of my life, because I thought, 'If we don't find this bear, we're in big trouble,'" he recalled. The value of a returned toy is two-fold: the family unit is happy and the airport receives word-of-mouth praise, which is accelerated by social media.

"It shows that we're not just a big, corporate money-making machine, but that the people at the airport have a heart," said Carroll.

The viral response to the tags emphasised the value of social media. Bourienne admitted that its effect had changed the communications operation. "We get more budget for social media. We had to recruit an agency to help us deal with customer complaints, comments and questions. It used to come by phone, but we don't have a phone line any more, or by email. But now it's 24 hours a day and the digital team and the PR

team could not cope, so we had to go for external support. We also created more jobs internally. With digital, the way of working has totally changed so we have had to adjust to it," he said.

Carroll added: "With PR as well, you can see something bubbling away [on social media] that [then] becomes an issue. It's also a great tool for marketing and PR.

"However, people don't have the patience that they may once have had, and they can instantly complain about something." He added that someone who had an issue with

an occasional flaw in the past maybe wouldn't have complained will now do so on Twitter.

"Now, if they are sitting waiting in a departure lounge, what do we all do there? We're on our phone, on Facebook or Twitter." He said this does mean you receive instant customer feedback. He gave the example that people might tweet to say, 'It's really warm where I am.' "So we ask them where they are and then we can check the thermostat. You're literally being able to gauge the temperature of your passengers," Carroll quipped.

He agreed that achieving an outcome where the reaction is roughly 80% positive on social media, means that the operation is doing quite well.

"I remember the bad old days when you queued for an hour to check in, then had another long queue for security. It's not like that nowadays. The expectations are very different. Now you get someone who'll tweet that they are disgusted that they queued for 13 minutes. The attitudes are different. We're so much more an 'instant generation' in how we react on social media."

All this has led to Glasgow Airport, now with around 30 airlines flying to more than 120 destinations, being named Scottish Airport of the Year in 2015 and 2016, as well as winning the Airport Operators' Association Best Airport (3-10 million passengers category) in those same years. In 2016, the facility also added ACI-Europe's award for best airport in the 5-10 million passengers category.

The airport has to continue working towards its master plan goals and deal with whatever the UK's withdrawal from the European Union brings. From its recent track record though, this team clearly likes to meet challenges. **AN**





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# AMERICAN AIRLINES DC-10s TRIJET TALES

American Airlines was the launch customer for the McDonnell Douglas DC-10. **Gerry Manning** analyses its service with 'American', which spanned nearly three decades.



**T**he roots of a new airliner are often not straightforward and the DC-10 was no exception to the rule. Its story began in 1964 when the USAF funded preliminary studies for a new heavy-lift cargo aircraft, which was known as the CX-HLS (Heavy Logistics System) project.

Boeing and Lockheed both submitted designs, along with Douglas, as it was still known, which had a long history of supplying transport aircraft to the US military. Its products were the backbone of Military Air Transport Service and the company was perhaps too confident of success.

It came as a shock when in late 1965 Lockheed won the 'race' for what was to become the C-5 Galaxy.

The other loser, Boeing, had made plans, if it did not win, to consider the commercial potentials of the large aircraft design. From that came the iconic 747.

No company wants to see design ideas lost, so Douglas began to look at civil applications for its project contender.

One was the Douglas D-918 with a double-deck fuselage and capacity for up to 900 passengers. For its time, this would have been far too large for the markets that existed in the 1960s.

The spur for the building of the ultra-large transports was the parallel development of power plants of 40,000lb st range. Both main US-based engine companies, Pratt & Whitney and General Electric, were working on projects that would mean any large aircraft would need only four engines.

In February 1966, Douglas began to circulate two different proposals for a next-generation aircraft to potential airline customers. These were the D-950 and D-952. Both were very large with seating capacity of up to 524 in the former and 536 in the latter.

If either went into production, it would be known as the DC-10. Following the launch of the Boeing 747, proposals for the D-950 were dropped but the D-952 went on at a slow pace, with an in-service date of 1975.

Douglas planners had looked at market

research of traffic trends and decided the DC-8 and the 707 would be able to handle demand up to the middle of the next decade (1975). They were proved right.

There were many empty seats when the Boeing 747 entered service at the start of 1970.

The Douglas company went through a massive upheaval at the start of 1967. Its long-term debt problem caught up with it, despite a large order book for the DC-9 and the stretched DC-8-60 series.

The McDonnell Aircraft company of St Louis, flush with cash from selling the F-4 Phantom II in high numbers to the US military, came to the rescue and in April of that year the merged company became the McDonnell Douglas Corporation.

The aircraft that we now know as the DC-10 was finalised at the end of 1967, but selling it to the world's airlines was no easy task. It was head-to-head with the Lockheed L-1011 TriStar.

First success came from American Airlines, which in February 1968 ordered 25, with a further 25 options. The plan





Left: On the final approach to Los Angeles, DC-10-10 N134AA about to land on Runway 06L in September 1988. The airport was one of the main centres for American Airlines' operations of the type. Gerry Manning

Top: One of three DC-10-30ERs in the American Airlines' fleet. Its maximum take-off weight was increased to 455,000lb. Bob O'Brien Collection

Above: The airline has long had a policy of not painting its aircraft as paint costs money and adds weight. A lighter aircraft uses less fuel and saves money. Gerry Manning

was for an in-service date in late 1971. The contract was provisional, in that the manufacturer wanted two other airlines to put pen to paper within 90 days before it would build the DC-10.

United Airlines, on April 25, announced an order for 30, plus 30 more options. This was deemed sufficient for James McDonnell, who was now in control of the manufacturer, to authorise full production. Both airlines would have simultaneous deliveries, then planned for August 1971.

## INTO THE AIR

July 23, 1970 saw prototype N10DC come out of the Long Beach, California, factory and on August 29 it took to the air for the first time with Clifford L Stout at the controls. A trio of General Electric CF6-6D turbofans with an output of 39,300lb st each provided the power.

The landing was 3hrs 26mins later at Edwards AFB with no reported problems. Just 11 months from this first flight, the DC-10-10 was certified by the Federal Aviation Authority (FAA). During this time, the type

had flown 929 times and logged 1,551 hours in the air.

As promised, both American Airlines and United Airlines received their first aircraft at the same ceremony presided over by James McDonnell on July 29, 1971, the day the FAA issued full type certificate.

Even though both airlines received their first aircraft at the same time, American upstaged United by flying in the ultimate classic Douglas airliner, the DC-3, in a 1930s livery, with a film star of that period, Gloria Swanson, on board.

American, the first to order the type, was also the first to put it into service. Eight days after delivery, DC-10-10 N103AA, operating flight AA184, left Los Angeles for a round trip to Chicago (ORD) on August 5. Since the DC-10 was much larger than most aircraft at that time, and airlines did not expect to fill them to capacity, American took out seats to fit passenger lounges.

In the front of the cabin was the First Class lounge. This had seating for eight and room for others to stand, and be served cocktails while talking to other passengers.

American had a second lounge at the rear of the aircraft for the Coach (Economy) passengers. This was the larger of the two having seats for 11 and room for another dozen, as well as a stand-up circular bar.

The overall seating capacity was 206. They were titled 'DC-10 LuxuryLiner' below the cockpit. Originally, they were going to call the fleet 'DC-10 Astroliner' and several aircraft in the test fleet bore this name, but it changed before service entry.

During that first year of operations in 1971, American had five DC-10s delivered and the remaining 20 from the first firm order followed in 1972. Of the 25 options, ten were converted to firm orders and delivered in the latter part of the decade.

The long-range version of the type, the DC-10-30, went into operation with the airline in 1983. Power for this variant came from three GE CF6-50c turbofans with an output of 48,000lb st. The maximum take-off weight was 575,000lb (260,816kg) an increase from the -10 model of 117,000lb (53,070kg).

To cope with the extra weight, the





Above: **An American Airlines' DC-10-30 at Manchester Airport in 1987. It had diverted from Gatwick due to poor weather at the London airport.** Lee Holden

Bottom: **DC-10-30 N143AA on approach to Miami in June 1989. The airport was a base for American Airlines DC-10s.** Gerry Manning

-30 was fitted with an extra undercarriage leg beneath the centre of the fuselage between the two main ones. The first to join American had previously been operated by Air New Zealand. A typical route for the -30 was to Europe.

The fleet grew in one giant leap when in 1984 Pan American, which had taken over National Airlines, sold all but one of its DC-10 fleet to American. This comprised four DC-10-30s and ten DC-10-10s. The airline also added three DC-10-30ERs

By 1987, the fleet had reached its peak with 51 -10s and 11 of the longer range examples.

The DC-10-10s and DC-10-30s both had the following configurations: 16 in First Class and 297 in Economy Class as well as 35 in First and 256 in Economy. While the DC-10-30ERs had 28 in First Class Premium, 36 in Business Class and 180 in Economy.

By now the luxury of two lounges had long since gone because there were more passengers flying the long-haul high-density routes around the continental

USA where the American aircraft typically operated.

The fleet was based in Chicago, Dallas, Honolulu, Los Angeles and Miami. They were largely used on domestic services, as well as to Europe, the Caribbean and Latin America.

## DARK CLOUDS

On June 12, 1972, less than a year after the introduction of the DC-10 into service came the first indication of a problem that would haunt the type. Flight AA96 from Los Angeles (LAX) to LaGuardia (LGA), New York, with stops at Detroit (DTT) and Buffalo was operated by N103AA.

Five minutes after take-off from Detroit, with 56 passengers and 11 crew on board, at an altitude of 11,750ft, the rear cargo door broke off causing immediate decompression. Part of the rear cabin floor collapsed, severing some of the control cables including that of the centre engine. All on board were lucky that Captain Bryce McCormick, First Officer Peter Whitney, and Flight Engineer Clayton Bruce, were

experienced airmen and able to control the DC-10, making an emergency landing back at Detroit with no loss of life.

The cause of the problem was for all to see. Prior to this incident there had been several reports of difficulty in closing the door and the manufacturer had issued a service bulletin calling for an upgrade in the wiring that drove the latches. Modification was not compulsory and that particular airframe had not been updated. Eighteen months later, a Turkish Airlines DC-10, crashed shortly after taking off from Paris, killing 346 people. It too had not been modified.

The first fatal crash of an American Airlines' DC-10 occurred on May 25, 1979 at Chicago's O'Hare Airport when -10 variant N110AA was operating flight AA191 to Los Angeles.

The aircraft was rolling down Runway 32R at take-off speed when the number one engine and its pylon detached from the left wing, taking a section of the leading edge with it.

It was too late to abandon take-off and





the crew followed the standard operating procedure of an 'engine out' climb, unaware of the full extent of the problem. The aircraft climbed to an estimated 325ft, rolled over and crashed 4,600ft from the end of the runway, killing all 271 passengers and crew as well as two more people on the ground.

The answer to why the engine and pylon detached was traced to the airline's practice of using a forklift truck to support these parts during routine maintenance – a method not recommended by McDonnell Douglas. This had resulted in metal fatigue leading to its separation.

Examination of other aircraft in the fleet found potential damage in other units. The FAA grounded all DC-10s under its jurisdiction on June 6. Following checks, it was allowed back into service on July 13.

American lost another hull on May 21, 1988 at Dallas (DFW) when N136AA was operating flight AA70 to Frankfurt, West Germany. The crew abandoned take-off and due to worn brakes the airliner ran off the end of the runway and the nosewheel collapsed. It was deemed beyond

## ROUTES AND TIMES

It would be all but impossible to list all the routes and services flown by DC-10s in American Airlines service, but these examples from 1998 gives a flavour of operations.

AA8 Honolulu to Dallas (DFW). Departed 5.20pm, arrived 5.35am (next day), 3,784 miles (6,090km).

AA19 New York (JFK) to Los Angeles. Departed at 10.30am, arrived at 1.20pm, 2,475 miles (3,983km).

AA72 Honolulu to Chicago (ORD). Departed 4.42pm, arrived 5.45am (next day), 4,246 miles (6,833km).

AA102 departed Honolulu 6.52pm, arrived Dallas (DFW) 7.10am (next day).

AA400 Miami to Santo Domingo, Dominican Republic. Departed 5.15pm, arrived 8.27pm; a distance of 859 miles (1,382km).

AA606 Los Angeles to Dallas (DFW). Departed 6.42am, arrived 11.45am, 1,240 miles (1,995km).

AA1266 Miami to Chicago (ORD). Departed 1.40pm, arrived 3.58pm, 1,201 miles (1,932km).

economic repair, but there were no fatalities among the 254 passengers and crew.

The last loss of a DC-10 in American service again took place in Dallas (DFW).

On April 14, 1993, N139AA operating flight AA102 arrived from Honolulu. In poor weather conditions the aircraft left the runway upon touchdown and the nose and left main gear collapsed with the aircraft coming to rest in the mud.

As with the previous accident, the airframe was beyond economic repair and there were no fatalities.

## WINDING DOWN

The fleet remained the same from 1988 to 1993 and then began the slow drawing down of operations. By 1994 a number of aircraft were on lease to Hawaiian Airlines and among the destinations of other examples, some were parked in various western US locations in storage pending delivery to Federal Express. The last service was operated by -30 N143AA on November 21, 2000 when it operated flight AA8 from Honolulu to Dallas (DFW), arriving early next morning. This closed a chapter in the airline's annals that had seen the DC-10 in service with the carrier for 29 years. **AN**



Above: A sad sight at Goodyear, Arizona, in September 1998 where a dozen ex-American Airlines DC-10s await their fate, already having had their engines removed. Key Collection

Below: DC-10-30 N140AA, here in the livery of Hawaiian Airlines, saw service with a number of different carriers. It started life in June 1973 with National Airlines and was absorbed into the fleet of Pan Am following its takeover of National in 1980. A lease to Lan Chile followed before it joined the fleet of American Airlines in March 1984. It then went to Transaero Airlines in June 1996 and to Hawaii in November 1998. The last commercial operator was Ghana Airways. Key Collection





# AIR BASE MOVEMENTS

A selection of the most interesting aircraft to visit air bases in the UK recently.



## RAF BRIZE NORTON

**3/10 NZ7572 757-2K2 40 Sqn, RNZAF dep 11th; 99-6143 C-32B 150th SOS, USAF n/s.** 4/10 UR-82073 An-124-100 Antonov Airlines dep 7th. 6/10 200/62-HH CN-235-300M ET03.062, French AF n/s. 7/10 0454 C-295M 242.tsl, Czech AF. 8/10 T-785 Falcon 900EX LTDB, Swiss AF also 19th. 13/10 MAC C-17A Qatar Emiri AF. 18/10 130617 CC-130J-30 436 Sqn, RCAF. **21/10 474/93-CE C-135FR GRV02.091, French AF o/s.** 26/10 93/XL (also 27th) & 105/XK TBM 700As ET00.041, French AF. 26/10 16-0055 A400M 221 Filo, Turkish AF n/s. 27/10 104/XJ TBM 700A ET00.041, French AF. 30/10 **87 blk An-30B Russian AF Open Skies.**

## RAF CONINGSBY

**2/10 50+83 & 50+76 (also 3rd) Transalls LG63, German AF.** 6/10 50+42 Transall LG63, German AF. 17/10 **C.15-36/12-04 & C.15-61/12-19 EF-18Ms Ala 12, Spanish AF both n/s.** 20/10 168998/LA P-8A VP-5, USN dep 25th.

## RAF FAIRFORD

**4/10 08-8605/YJ C-130J-30 37th AS, 86th AW, USAF (374th AW markings);** N819AX 777-2U8ER Omni Air International. 5/10 07-8614/RS C-130J-30 37th AS, 86th AW, USAF. 10/10 **86-0101/DY (dep 27th) & 86-0105/DY (dep 23rd) B-1Bs 28th BS, 7th BW, USAF.** 11/10 N409MC 747-47YF Atlas Air. 13/10 85-0004 C-5M 436th/512nd AW, USAF dep 16th. 16/10 N976BA 747-4B5/BCF Kalitta Air. 19/10 E26/705-ND Alpha Jet E EAC00.314, French AF o/s. 20/10 07-7182 C-17A 437th/315th AW, USAF. 30/10 N378AX 767-33AER Omni Air International. 31/10 07-7179 C-17A 60th/349th AMW, USAF.

## RAF LAKENHEATH

**2/10 165832 C-40A VR-58, USN.** 3/10 09-9206 C-17A 437th/315th AW, USAF dep 6th. 11/10 89-2029/AV & 88-0516/AV F-16Cs 510th FS, 31st FW, USAF. 11/10 83-0076 KC-10A 60th/349th AMW, USAF n/s. 11/10 07-7181 C-17A 437th/315th AW, USAF n/s; 84-0189 KC-10A 305th/514th AMW, USAF. 13/10 86-0017 C-5M 436th/512nd AW, USAF; 01-0193 C-17A 437th/315th AW, USAF n/s; 04-4133 C-17A 305th/514th AMW, USAF n/s. 18/10 08-8200 C-17A 62nd/446th AW, USAF n/s. 19/10 165830 C-40A VR-59, USN. 26/10 87-0032 & 85-0010 C-5Ms 60th/349th AMW, USAF both n/s. 31/10 C-215 Challenger 604 Esk 721, Royal Danish AF.

**Lithuanian Air Force C-27J Spartan, 08, visited RAF Lakenheath on November 13.** Matt Varley

## RAF LINTON-ON-OUSE

**29/9 260, 261 & 269 PC-9Ms FTS, Irish Air Corps.**

**11/10 130610 CC-130J 436 Sqn, RCAF dep 16th.**

## RAF LOSSIEMOUTH

**1/9 165829 C-40A USN also 11th.** 5/9 140103 CP-140 RCAF dep 24th. 15/9 10-0217 C-17A 62nd/446th AW, USAF n/s. 21/9 168433/LD P-8A VP-10, USN dep 18th; 168763/LD P-8A VP-10, USN dep 19th. 21/9 84-0085 C-21A 76th AS, 86th AW, USAF. 23/9 169006 P-8A VP-30, USN dep 18th. 25/9 06-6161 C-17A 437th/315th AW, USAF. 29/9 5 Atlantique 2 French Navy dep 4/10; 111/62-II CN-235-300M ET01.062, French AF; 3296 P-3C 333 Skv, Royal Norwegian AF dep 9/10; 5601 C-130J-30 335 Skv, Royal Norwegian AF.

**2/10 140111 CP-140 RCAF dep 18th.** 3/10 08-8602/RS & 06-8611/RS C-130J-30s 37th AS, 86th AW, USAF. **4/10 89-2026/AV & 88-0413/AV F-16Cs 510th FS, 31st FW, USAF both dep 18th.** 5/10 07-8608/RS C-130J-30 37th AS, 86th AW, USAF. 9/10 07-8613/RS C-130J-30 37th AS, 86th AW, USAF; 195/62-HC CN-235-300M ET03.062, French AF. 10/10 89-2028/AV & 88-0516/AV F-16Cs 510th FS, 31st FW, USAF both dep 18th. 11/1084-0087 C-21A 76th AS, 86th AW, USAF. 12/10 5699 C-130J-30 335 Skv, Royal Norwegian AF n/s; 140115 CP-140 RCAF dep 29th. 31/10 71 Xingu 28F, French Navy. 18/10 130617 CC-130J 436 Sqn, RCAF n/s; 168432/LA & 168436/LA (n/s) P-8As VP-5, USN.

**19/10 168437/LA (dep 26th) & 168998/LA (n/s also 20th & 25th) P-8As VP-5, USN; B-538 C-130J-30 Esk 721, Royal Danish AF n/s; 168438/LA P-8A VP-5, USN, dep 26th.** 24/10 06-8610/RS C-130J-30 37th AS, 86th AW, USAF also 25th. 26/10 0125 Falcon 20C-5 717 Skv, Royal Norwegian AF.

## RAF MILDENHALL

**1/10 159894/RC P-3C & 162318 P-3Cs VP-46, USN both n/s.** 5/10 165151 C-20G CFLSW Sigonella also 23rd; 161593 P-3C USN dep 7th. 9/10 161411 P-3C VP-46, USN n/s; **N178B & N779LC Gulfstream IIs HALOs both dep 17th.** 10/10 "610" P-3C aircraft wore false serial 160610 believed to be a VPU-2 aircraft. **19/10 165830 C-40A USN; 159326/RC P-3C VP-46, USN n/s.** 20/10 162784 E-6B CSCW-1, USN dep 29th. **21/10 161766/RC P-3C VP-46, USN n/s.** 23/10 169226/QB KC-130J VMGR-352, USMC n/s. 28/10 84-0060 C-5M 60th/349th AMW, USAF. 30/10 16-0055 A400M 221 Filo, Turkish AF.

## RAF NORTHOLT

**3/10 50+76 Transall LTG63, German AF. 4/10 MM62211 Avanti Italian Coastguard.** 5/10 50+66 Transall LTG63, German AF n/s. 12/10 012 C-295M 13.eltr, Polish AF. 16/10 V-11 Gulfstream IV 334 Sqn, Royal Netherlands AF n/s; T.18-4/45-43 Falcon 900B. **19/10 E26/705-AD Alpha Jet E EAC00.314, French AF; 090/ZF & 078/YE Xingus EAT00.319, French AF; G-15 MD-520N Belgian Gendarmerie n/s.** 29/10 252 CN-235M 101 Sqn, Irish Air Corps.

Key: n/s night stop; o/s overshoot



**Swiss Air Force Boeing F/A-18C Hornet J-5018, in special Squadron 18 'Panthers' markings, rolls to the end of the main runway at RAF Lossiemouth on November 14. Ten Swiss Hornets were present at the base for Exercise Scotnight, from November 13 to December 8, which was mainly for pilots to practise night flying with some daytime sorties. Ørland, which is the normal choice for the annual deployment, was not available due to construction work at the Norwegian base.** Niall Paterson



# AIRPORT MOVEMENTS

A round-up of notable aircraft visiting UK airports.



## ABERDEEN

**2/10** D-CHIP CitationJet 525B CJ3. **5/10** OY-GSA PC-12. **6/10** HB-IZP Saab 2000 Darwin Airlines op for Eastern Airways; **VH-LEP Global 6000**. **9/10** RA-09006 Falcon 900EX; D-AFAI Challenger 604. **10/10** CS-LAM Global 5000. **11/10** OK-EMA Citation 680 Sovereign; LN-AKR Falcon 900EX. **17/10** LN-OBX AS332C Airlift AS. **22/10** HB-IZH Saab 2000 Darwin Airlines op for Eastern Airways. **23/10** I-DELO Gulfstream G550; T7-CBG Falcon 7X. **25/10** S5-ICR Citation 560XL. **26/10** 0125 Falcon 20C-5 717 Skv, Royal Norwegian AF.

## BIGGIN HILL

**1/10** D-BUZZ Citation 750 X; F-HESB AS350B3; T7-DSD Gulfstream G150; VQ-BVA Hawker 850XP. **2/10** I-GGEA Citation 560XLS+. **3/10** SP-ATT Hawker 400XP. **4/10** D-IAPC Diamond DA-62. **5/10** SP-AST CitationJet 525 CJ1. **6/10** **PR-CIP Gulfstream G550**; T7-RAS HondaJet. **8/10** D-FTON PC-12; F-HCAC Diamond DA-42; LX-GJM CitationJet 525C CJ4; YU-FNR CitationJet 525 CJ1; **ZS-TSN Challenger 600S**. **9/10** HB-LKF Cessna 340A; I-JACK HondaJet; TC-GHP Challenger 850. **10/10** C-FIPX Global Express. **11/10** 078/YE Xingu EAT00.319, French AF. **14/10** C-FHTH TBM 930; C-GRRD Citation 510 Mustang; D-ALIK Challenger 850. **15/10** SP-SPE ATR 72-202 SprintAir. **16/10** OM-FWW Premier 1. **19/10** YU-PMK Citation 560XLS+. **20/10** F-HMED BAe 1000A; OK-RRR PA-46-M600. **22/10** D-ITIM HondaJet; OY-IPE Lancair LC-41; SP-TAT Beech 400A. **25/10** TC-RSB Learjet 45; YU-PZM Citation 560XLS+; 4O-MNE Learjet 45. **26/10** LY-FSK Hawker 900XP. **28/10** OY-GSB PC-12; T7-SSM Global Express; **8P-ASD Gulfstream G650ER**. **29/10** LX-NCG CitationJet 525B CJ3. **30/10** D-HARI A109E LUH.

## BIRMINGHAM

**2/10** **A7-LAE, A7-LAF, A7-LAG & A7-LAH A320-214(SL)s Qatar Airways all f/vs & EC-MFA A340-313 Plus Ultra f/v all for Monarch repatriations**. **3/10** EC-LZO 767-35D(ER) Privilege Style f/v, N864AX 777-2U8(ER) Omni Air International f/v & YL-LCP A320-232 SmartLynx f/v all for Monarch repatriations. **4/10** UR-11819 An-12BP Motor Sich Airlines. **5/10** EC-MFB A340-313 Plus Ultra f/v, N819AX 777-2U8(ER) Omni Air International f/v all for Monarch repatriations. **8/10** I-BPAD 767-3XZ(ER) Blue Panorama. **10/10** 9H-JAI A340-

**Med-View Airline Boeing 767-300ER, 5N-BQN, departing Cardiff Airport on November 25. The aircraft had stopped off en route to MOD St Athan for maintenance from Cardiff Aviation.** Phil Woods

**313 Hi-Fly f/v.** **11/10** UR-CAJ An-12BK Ukraine Air Alliance. **12/10** **A7-LAH A320-214(SL) Qatar Airways for Monarch repatriations**; LZ-ABJ An-26B Rose Air; D-BUBI & YR-TRC Challenger 300s; 9H-OME 737-505 Air X Charter. **14/10** **A7-LAC & A7-LAD A320-214(SL)s Qatar Airways both f/vs for Monarch repatriations.** **16/10** T7-ROK Challenger 604 also 18th. **20/10** ES-LSB Saab 340A Airst f/v. **22/10** EC-MII A330-343 Evelop Airlines f/v. **25/10** UR-CNT An-12BK Ukraine Air Alliance. **26/10** OE-FMO Eclipse EA.500. **31/10** D-HARI A109E LUH.

## BRISTOL INTERNATIONAL

**2/9** HB-JLG Challenger 350 n/s. **4/9** F-HAMG CitationJet 525A CJ2. **6/9** HB-VDW Learjet 45; OE-GWS Citation 560XLS+. **8/9** D-CHRC CitationJet 525C CJ4. **15/9** OE-FCZ CitationJet 525A CJ2+; OK-EMA Citation 680 Sovereign also 18th; D-FUEL PC-12; LX-GVI Gulfstream G650. **22/9** D-CAAY Learjet 55; PH-DKH Cessna 172P n/s.

## GLASGOW

**2/10** OE-IXX Global 5000; D-BUBI Challenger 300. **4/10** YR-FKB Fokker 100 Carpatair; OK-TSQ 737-8KN Travel Service; OK-JFA Beech 400A; **MM62211 Avanti Italian Coast Guard**; OM-BYK A319-115CJ Slovak Government. **5/10** OM-BLS Citation 560XLS+; OE-HOP Gulfstream G200; 9H-FAM Phenom 100; **MM81598/3-23 SH-90A Italian Navy**; D-AERO Legacy 650; B-8197 Global 6000. **6/10** OE-IBM Legacy 650. **7/10** OY-JTE

737-3L9 Jetttime. **11/10** LX-LAR Learjet 45. **15/10** SP-EAR Citation 680 Sovereign; F-HSY PA-34-220T. **17/10** N910AD TBM 910 c/n 1199 on delivery. **25/10** N532TX Cessna/Textron Scorpion en-route to Dubai Airshow, with support from N399ES Citation 680 Sovereign. **28/10** 9H-FGV Phenom 100. **30/10** I-GOCO Learjet 40. **31/10** OY-EKC Falcon 7X.

## JERSEY

**1/10** SP-EAR Citation 680 Sovereign; OE-GCE Hawker 800XP. **2/10** 9A-JSD CitationJet 525A CJ2. **22/10** ZS-EOS AW139. **8/10** D-AAHB Global Express. **12/10** 143 Falcon 10MER 57S, French Navy. **13/10** HB-PST PA-46 JetPROP DLX. **15/10** 9H-FGV Phenom 100; PH-AED PA-28-181. **16/10** D-AZUR Legacy 650; T7-RAS HondaJet. **17/10** 9H-DDJ Learjet 75. **18/10** OO-OCA Beech 350i. **19/10** CS-DGW CitationJet 525B CJ3. **20/10** F-HTSY PA-28R-201. **23/10** 160/ABV TBM 700B EAAT, French Army. **24/10** 9H-FAM Phenom 100. **25/10** D-EGDC AA-5 Traveler. **26/10** F-HPYB Diamond DA-40D; OE-GWV Citation 560XLS+. **27/10** F-GRID Cirrus SR-20; F-HOLI PC-12. **30/10** F-HEND Citation 510 Mustang. **31/10** D-EPPG PA-46-500TP.

## LONDON GATWICK

**2/10** **A7-LAA, A7-LAB, A7-LAC, A7-LAD, A7-LAH A320-214(SL)s; A7-ADB & A7-ADE A320-214s Qatar Airways for Monarch repatriations.** **3/10** EC-MRM 747-4H6 Wamos Air, Monarch repatriations; SX-ORG A320-232 Orange2Fly, Monarch repatriations. **4/10** F-HBAP A320-214 Aigle Azur; OM-GTF 737-86J Go2Sky; 9H-JAI A340-313X Hi-Fly Malta all for Monarch repatriations. **5/10** N732MA 737-81Q Miami Air, Monarch repatriations. **7/10** OY-JTR 737-73A



**Emirates Flight Training Academy Phenom 100EV, A6-DWC, routed via Glasgow Airport over November 3-4 on its delivery flight. It is the first of five ordered by the academy.** Iain Mackenzie



**Colombian Air Force BBJ, FAC0001, on approach to London Stansted Airport on November 9.** Keith Burton.



Jettite f/v. 15/10 SX-EMM A319-132 Ellinair f/v. **19/10** OE-HWM Gulfstream G280 f/v; T7-MHA Challenger 605 f/v, Luton diversion. 21/10 TF-ISW 767-319ER Icelandair f/v; OE-FXM CitationJet 525A CJ2 f/v. 22/10 TF-ISO 767-319ER Icelandair f/v. 27/10 TF-ISO 767-319ER Icelandair f/v. 29/10 9H-VCK Challenger 350 VistaJet f/v. 30/10 5B-DCU A319-112 Cobalt Air new service f/v.

## LONDON HEATHROW

**22/10** G-DHKJ 757-28APCF DHL Air f/v; LN-STB Challenger 350. 23/10 G-PRPO Dash 8-Q402 Flybe f/v. 24/10 A4O-DI A330-343E Oman Air f/v. **25/10** D-ABHK A320-216 niki op for Eurowings f/v. 26/10 HL8077 777-FB5 Korean Air f/v. 28/10 B-16740 777-300ER EVA Air f/v. 29/10 G-DHKF 757-236PCF DHL Air f/v; HL8079 A350-941 Asiana f/v; JA837J 787-8 JAL f/v. 30/10 JA845J 787-8 JAL f/v. 31/10 JA841J 787-8 JAL f/v.

**1/11** HL7578 A350-941 Asiana f/v. 2/11 OE-LXE A320-216 Austrian Airlines f/v. 3/11 CS-TJH A321-212 TAP f/v; HL8078 A350-941 Asiana f/v. 4/11 D-ABQC Dash 8-Q402 Eurowings f/v. 5/11 CS-TOX A330-343E TAP f/v. 6/11 EC-III 737-86Q Air Europa op for Eurowings f/v. 8/11 D-ABQR Dash 8-Q402 Eurowings f/v; N438AM 787-9 Aeromexico f/v; OE-LYY A319-132 Eurowings Europe f/v. 9/11 D-AINI A320-271N Lufthansa f/v. 10/11 OO-TCV A320-214 Brussels Airlines f/v. **11/11** C-FBSV 787-9 Air Canada f/v. 12/11 3B-NBP A359-941 Air Mauritius f/v; ET-AUC A350-941 Ethiopian Airlines f/v; G-DHKC 757-256PCF DHL Air f/v. 13/11 JA839J 787-8 JAL f/v. 16/11 TC-JVM 737-8F2 Turkish Airlines f/v. 17/11 B-8019 A330-243 Beijing Capital Airlines f/v. 18/11 A7-ALO A350-941 Qatar Airways f/v; OE-IQB A320-214(SL) Eurowings Europe f/v; TC-JYN 737-9F2 Turkish Airlines f/v; VT-NAC 787-8 Air India f/v. 19/11 OO-TCH A320-214 Brussels Airlines f/v.

## LONDON LUTON

**1/10** OE-LMK E170ST Peoples' Viennaline; HA-FAW 737-476F ASL Airlines. 2/10 9H-SKM Gulfstream G450; SX-SOF A320-232 Orange2Fly, **A7-LAD A320-214(SL), A7-ADB & A7-ADE A320-232s Qatar Airways**; N732MA 737-81Q Miami Air all Monarch repatriation flights. 3/10 CS-TRH A330-343 XL Airlines & TC-FHB A320-214 Freebird both Monarch repatriation flights; OE-LTK170LR Peoples' Viennaline. 4/10 SX-ORG A320-232 Orange2Fly, Monarch repatriation flights; CS-LPA

Phenom 300. 6/10 OY-NPG Metro 23 North Flying; LX-DEA Citation 560XLS; ES-SLS Falcon 900LX; VP-BIZ BBJ1; LX-GVV A319-115CJ. 7/10 **A7-LAH A320-214(SL) Qatar Airways & TC-FBO A320-214 Freebird** both Monarch repatriation flights; N715CJ Hawker 4000; N650XF Gulfstream G650; 4K-LAR Gulfstream G450; **VT-BVV Falcon 2000LX**. 8/10 HA-FAY 737-429F ASL Airlines. **9/10** OO-JEB E190STD JetAirFly. 10/10 N430FJ Do.328Jet. 11/10 TC-FBV A320-214 Freebird, Monarch repatriation flight; C-GJDU Challenger 350. 14/10 CS-EFG Falcon 7X. 17/10 OO-JAL 737-7K2 Jetairfly for maintenance. 18/10 HB-JUC Falcon 7X. 19/10 N2PG Gulfstream G650ER; N798MS Legacy 650. 20/10 LZ-AOA A319-112 Bulgarian Eagle; TF-FIH 757-208F Icelandair for maintenance with Monarch Engineering. 22/10 TC-KLN Challenger 605. 23/10 N679MS Legacy 600; EC-JXR Falcon 2000. 25/10 YR-CBK 737-382 Cobrex Trans. 26/10 HB-JVM E190-100LR Helvetic, London City diversion; N211QS Challenger G650; 9A-JSD CitationJet 525A CJ2. **28/10** D-CSCE Phenom 300. 29/10 VQ-BBQ Hawker 750. 30/10 SP-TAT Beech 400A; C-FSXR Challenger 300. 31/10 EC-ILO A321-211 Iberia.

## LONDON SOUTHEAST

**1/9** D-IPCG Cessna 425. 2/9 HB-FOZ PC-12. 3/9 D-CAST CitationJet 525B CJ3. 5/9 N99FG Falcon 900EX; 9H-FCA Global 6000 f/v. 6/9 PH-LAG PA-28-181; 2-MSTG Citation 510 Mustang also 18th. **9/9** D-CEIS Citation 680 Sovereign n/s; EI-FML A319-111 Volotea Airlines f/v. 11/9 N81MG Cessna P.210N dep 2/10. 12/9 EI-GAU A319-111 Volotea Airlines f/v. 14/9 D-CGRG Learjet 35A. 15/9 D-IEMO Premier 1A n/s. 16/9 2-JSEG Eclipse

EA.500 f/v, dep 2/10. 20/9 LX-TAC Phenom 300 n/s. 21/9 YU-PZM Citation 560XLS+; OK-EMA Citation 680 Sovereign f/v; F-GZGD Cessna TR.182RG n/s; HB-WYO CzAW SportCruiser. 23/9 HB-VSK Gulfstream G650. 23/9 PH-EHN Cessna F.172M n/s; D-ETDT Mooney M.20K n/s. 26/9 F-GKCR PA-28RT-201T n/s; M-LCFC BBJ1 f/v. **27/9** F-GTRY CitationJet 525 CJ1 n/s; F-GRNT Merlin 3B Airlec Air Espace f/v, n/s.

## MANCHESTER

**1/10** CN-NMM A320-214(SL) Air Arabia Maroc f/v, new 2 x per week service. 2/10 9H-JAI A340-313X HiFly Malta f/v; EC-MNY A330-243 Wamos Air, CS-TQP A330-202 HiFly, CS-TRH A330-343X Orbest, EC-MNY A330-243 Wamos Air f/v, TC-FBV A320-214 Freebird & SX-SOF A320-232 Orange2Fly f/v, all Monarch repatriation flights. **3/10 A7-ADB A320-232 Qatar Airways**, N732MA 737-81Q Miami Air f/v, op Monarch repatriation flights; UR-CGW An-12BP Ukraine Air Alliance. **4/10** TC-FHY A320-214 Freebird, **A7-LAG A320-214(SL) Qatar Airways f/v** & F-HFUL A320-214 Aigle Azur f/v all op Monarch repatriation flights; **D-AIMM A380-841 Lufthansa f/v medical diversion**; D-ITWL Cessna 425 f/v. 5/10 OM-GTF 737-86J Go2Sky f/v & EC-LZO 767-35DER Privilege Style both Monarch repatriation flights. **6/10** EC-LXA A330-343X Velop Air f/v & 9H-FOX A340-313x HiFly f/v both Monarch repatriation flights; A7-BFJ 777-FDZ Qatar Airways Cargo f/v; 274 AW139 301 Sqn, Irish Air Corps f/v. 7/10 **A7-LAC A320-214(SL) Qatar Airways f/v** & OM-GTF 737-86J Go2Sky both Monarch repatriation flights. 8/10 CS-TFZ A330-243 HiFly, Monarch repatriation flights. 9/10 N819AX 777-2U8ER Omni Air f/v, Monarch repatriation flight. 10/10 SX-SOF A320-232 Orange2Fly, Monarch repatriation flights; YL-RAI ATR72-202F RAF-Avia f/v. 16/10 9K-AOE 777-300ER Kuwait Airways f/v, Shannon diversion. **18/10** D-ITIM Hondajet f/v. 19/10 C-GNCH 737-81D Sunwing/TUI Airways f/v, Leeds diversion; OO-NEY Legacy 450 type f/v. 24/10 D-COLT Legacy 300 f/v; D-AWWW Gulfstream G650ER f/v. 25/10 OM-FWW Premier 1A f/v. 28/10 TF-AMU 747-48EF Air Atlanta Cargo for painting at Air Livery. 30/10 CS-TKR 767-36NER Euro Atlantic f/v.

Key. f/v first visit; n/s night stop; o/s overshoot.



**Newcastle International Airport hosted Royal Norwegian Air Force AW101, 0268, on November 17 when it passed through on its delivery flight. Unfortunately, the helicopter rolled onto its side during a ground run on November 24 at Sola Air Station in Stavanger.** Ian Tate

With thanks to: D Apps, D Banks, D Bougourd, S Boyd, J Brazier, N Burch, P Claridge, A Clarke, I Cockerton, KW Ede, M Farley, N French, P Gibson, D Graham, A Greening, J Gregory, G Green, I Grierson, D Haines, M Harper, K Hearn, G Hocquard, B Hunter, S Lane, G Morris, S Morrison, R Richardson, R Roberts, E Russell, RJ Sayer, M Shepherd, A Smith, D Turner, JA White, G Williams, Blackpool Aviation Society, Manston Movements, Solent Aviation Society/'Osprey', South Wales Aviation Group, CIAN, GSAE, The Aviation Society, EGPE ATC, www.dtmovements.co.uk, Aerodata Quantum Plus and RHADS.



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# REGISTER REVIEW

The latest changes on the UK, Irish, Isle of Man, Guernsey and Jersey registers.



Boeing 737-800, G-JZBB – an addition to the Jet2 fleet. Huy Do

## RESTORATIONS

REG'N	MODE(S)	TYPE	C/N	OWNER
G-AVLD	407478	Piper PA-28-140 Cherokee	28-23193	Flight and Media Enterprises Ltd, Bournemouth, Dorset
G-AWHH	4073EB	Hispano HA-1112-M1L Buchon	145	Anglia Aircraft Restorations Ltd, Sywell, Northamptonshire
G-BEVG	400F7B	Piper PA-34-200T Seneca II	34-7570060	M Klies, Bonn-Hangelar, Germany
G-BSIO	403195	Cameron Furness Building-56	2310	RE Jones, (Lytham St Annes, Lancashire)
G-CDLB	404E06	Cameron Z-120	10672	JA Hibberd, (Krimpen aan den IJssel, Netherlands)
G-CHGI	406787	Beech A36 Bonanza	E-1784	Aeronav87 Maintenance, Limoges-Bellegarde, France
G-EDBD	4065F9	PZL-Bielsko SZD-30 Pirat	S-02.02	SP Burgess and AM Bennett, Husbands Bosworth, Leicestershire
G-FLEW	4040F8	Lindstrand LBL 90A	586	HC Loveday, (South Croydon, Greater London)
G-LFVC	404214	Vickers Supermarine Spitfire Vc	---	Comanche Warbirds Ltd, Duxford, Cambridgeshire
G-MWER	4030DB	Solar Wings Pegasus XL-Q	SW-WQ-0287	The Microlight School (Lichfield) Ltd, Roddige, Staffordshire

## NEW REGISTRATIONS

REG'N	MODE(S)	TYPE	C/N	OWNER
G-CJXH	4072BC	Embraer Phenom 100	50000380	Affinity Flying Training Services Ltd, RAF Cranwell, Lincolnshire
G-CKEW	407360	Airbus Helicopters EC135T3	2024	Airbus Helicopters UK Ltd, Oxford, Oxfordshire
G-CKIC	40737A	Grob G.120TP-A	11131	Affinity Flying Training Services Ltd, RAF Barkston Heath, Lincolnshire
G-CKID	40737C	Grob G.120TP-A	11132	Affinity Flying Training Services Ltd, RAF Barkston Heath, Lincolnshire
G-CKIM	4073AD	Airbus Helicopters EC135T3	2026	Airbus Helicopters UK Ltd, Oxford, Oxfordshire
G-CKJU	4073C7	Airbus Helicopters EC135T3	2028	Airbus Helicopters UK Ltd, Oxford, Oxfordshire
G-CKJW	4073C8	Airbus Helicopters EC135T3	2027	Airbus Helicopters UK Ltd, Oxford, Oxfordshire
G-CKMU	407422	Boeing 787-9 Dreamliner	63313	Norwegian Air UK Ltd, London Gatwick, West Sussex
G-CKPF	407441	Champion 7GCGC Citabria	110	CF Dukes, Perranporth, Cornwall
G-CKPH	407443	Airbus Helicopters AS350B3 Ecureuil	8439	Airbus Helicopters UK Ltd, Oxford, Oxfordshire
G-CKPS	40744B	Eurocopter AS350B2 Ecureuil	2109	Helitrain Ltd, Cotswold Airport, Gloucestershire
G-CKRG	407452	BAe Avro RJ100	E3359	Tronosjet Maintenance Inc, Summerside, Canada
G-CKRK	407453	Guimbal Cabri G2	1210	European Helicopter Importers Ltd, Oxford, Oxfordshire
G-CKRZ	40746B	best Off Skyranger Nynja LS 912S(1)	BMAA/HB/693	RJ Clarke (c/o BMAA, Deddington, Oxfordshire)
G-CKSG	407470	BAe Avro RJ100	E3322	Trident Turboprop (Dublin) DAC, (stored Cranfield, Bedfordshire)
G-CKSZ	40748F	Cameron Sport-90	12151	Cameron Balloons Ltd, (Bristol, City of Bristol)

G-CKTT	407445	P & M Quik GTR	8759	MK Ashmore, Blue Tile Farm, Hindolveston, Norfolk
G-CKUR	40746A	Best Off Skyranger Swift 912(1)	BMAA/HB/699	RF Pearce, (Uckfield, East Sussex)
G-CLUV	407475	Schleicher ASK-23B	23102	Midland Gliding Club Ltd, Long Mynd, Shropshire
G-CRNS	407420	Dassault Falcon 7X	161	TAG Aviation (UK) Ltd, Farnborough, Hampshire (NB)
G-DIGZ	407072	Hughes 369D	1111D	Mackinnon Construction Ltd, Walpole Barris, Empingham, Norfolk
G-ELUX	40744F	Rolladen-Schneider LS8-18	8277	M Davis, Nympsfield, Gloucestershire
G-FAZT	4073B4	Stoddard Hamilton Glasair II-SRG (built by RS Van Dijk)	2069	C Bruce, Nottingham City, Nottinghamshire
G-FLYK	40747F	Beech B200 King Air	BB-921	DTA Rees, Haverfordwest, Pembrokeshire
G-ILLR	4008BC	BAe Avro RJ100	E3379	Cello Aviation Ltd, Birmingham, West Midlands
G-JPIT	40749C	Pitts S-2S Special	LAA 009C-15409	RS Goodwin, (Leigh, Worcestershire)
G-JZBA	40717D	Boeing 737-800	63157	Dart Leasing and Finance Ltd, Leeds-Bradford, West Yorkshire (NB)
G-JZBB	40717E	Boeing 737-800	63158	Dart Leasing and Finance Ltd, Leeds-Bradford, West Yorkshire (NB)
G-KVAN	40139A	Flight Design CTSW	8334	K Brown, Bakersfield Farm, Weldon, Nottinghamshire
G-MIRV	407466	Van's RV-8	LAA 303-15153	SP Ayres and ERJ Hicks (Colerne, Wiltshire & Bristol)
G-MRLZ	407469	Robinson R44 Raven II	10396	Catedra Service XXI SL, Murcia-Alcantarilla, Spain
G-NJCZ	407468	Czech Sport Aircraft PiperSport	P1001087	Aerocruz Ltd, North Weald, Essex
G-OHZO	407465	Aviat Husky A-1A	1425	Neil's Seaplanes Ltd, St. Fillans, Loch Earn, Perth & Kinross
G-ORUN	40746E	Just Aircraft Escapade	LAA 345-15129	MJ Clarke, (Horsham, West Sussex)
G-RKBD	407367	Diamond DA 42	42.183	Airways Aviation Academy Ltd, Huesca-Pirineos, Spain
G-SUTE	40749D	Van's RV-8A (built by J Leitgeb)		AH Brown and GN Fraser, Portmoak, Perth & Kinross
G-SWAI	407479	Swift Aircraft SW01A	SW01A-0001	Swift Aircraft Ltd, (Norwich, Norfolk)
G-TCAE	4009F6	Airbus A320-214	1954	Thomas Cook Airlines Ltd, Manchester, Greater Manchester
G-TULA	407473	Diamond DA 40D Star TDi (built by Shandong Bin Ao Aircraft Industries Co. Ltd)	40.DS002	AJW Construction Ltd, Bournemouth, Dorset
G-VZSF	407376	Hawker Sea Fury T.20	ES.8503	Patina Ltd, Duxford, Cambridgeshire
G-WYLD	40133E	Cessna T210N Turbo Centurion	210-64341	RM De Roeck, Kirknewton, West Lothian
G-XPTV	407456	Embraer Legacy 600	14501051	Arena Aviation Ltd, Biggin Hill, Greater London
G-ZZOT	4073EE	Piper PA-34-220T Seneca V	3449108	Cheshire Aircraft Leasing Ltd, Hawarden, Flintshire
El-FPS	4CAC9F	Bombardier CRJ-900LR	15437	Cityjet Designated Activity Company, Stockholm-Arlanda
El-GCY	4CABB	Airbus A320-214	4128	Cavic 25 Designated Activity Company, Almaty, Kazakhstan
El-GDE	4CABB6	Boeing 737-800	44803	Ryanair Designated Activity Company, Dublin (NB)



EI-GDF	4CABB7	Boeing 737-800	44801	Ryanair Designated Activity Company, Dublin (NB)
EI-GDG	4CABB8	Boeing 737-800	44804	Ryanair Designated Activity Company, Dublin (NB)
EI-GDH	4CABB9	Boeing 737-800	44805	Ryanair Designated Activity Company, Dublin (NB)
EI-ICS	4CACA4	Sikorsky S-92A	920259	CHC Ireland Designated Activity Company, Waterford, Co. Waterford
EI-SLZ	4CA933	ATR 72-202	419	ASL Airlines (Ireland) Ltd, Paris-Charles de Gaulle, France (NB)
EI-STJ	4CA7F9	Boeing 737-490	28885	ASL Airlines (Ireland) Ltd, Cologne-Bonn, Germany (NB)
EI-ZEU	4CACAF	Cessna 525A CitationJet CJ2	525A0202	Airlink Airways Ltd, Shannon (NB)
M-AGMA	424B04	Bombardier Global Express XRS	9347	Sugar Mama Ltd, TBA
M-AKAL	43EAF9	Bombardier Challenger 604	5520	A & A Aviation Ltd, Bourmemouth, Dorset
M-DSUN	43EAF6	Bombardier Global 5000	9758	Splendiferous Global Ltd, Hong Kong-Chek Lap Kok
M-MBLY	424B06	Bombardier Global 6000	9776	ASAJ Holdings LLC, Tel Aviv-Ben Gurion International, Israel
M-ORAD	43EAEF	Dassault Falcon 7X	147	Swift New Jet Ltd, TBA
M-SETT	43EAF5	Bombardier Global 6000	9782	Lodging 2020 Limited Partnership Inc, Tel Aviv-Sde Dov, Israel
M-SURE	43EAF4	Dassault Falcon 7X	155	Airang Aviation IOM Ltd, Dhaka-Hazrat Shahjalal International, Bangladesh
M-YGIL	43EAE8	Bombardier Global Express	9033	Ansaki Aviation Two Ltd, TBA
2-AERD	TBA	Airbus A330-223	275	Aircraft Lotus Inc, stored Goodyear (Phoenix) Litchfield Municipal, Arizona
2-ALOU	TBA	Sud Aviation SE3130 Alouette II	1583	S Atherton, Crab Tree Farm, Deighton, North Yorkshire
2-AVCO	TBA	Bombardier CRJ200ER	7625	Avionco Ltd, (Guernsey)
2-AVIT	TBA	Boeing 737-3K2	27635	Olesya Aircraft Leasing Ltd, (stored Tucson International, Arizona, USA)
2-CFML	TBA	Bombardier CRJ200ER	7767	Regional One Inc, (stored Ljubljana, Slovenia)
2-GFKZ	TBA	Bombardier CRJ200ER	7624	Nantong China Aircraft Maintenance & Engineering Co. Ltd, (stored at Niigata, Japan)
2-PDPD	TBA	Agusta Bell 206B JetRanger III	8690	Pink Time Ltd, (Downpatrick, Co. Down, Northern Ireland)
2-PJBA	43EBF7	Aérospatiale SA341G Gazelle Srs.1	1392	S Atherton, Redhill, Surrey (operated by PJ Brown t/a PJ Brown Civil Engineering & Haulage)
2-RLAU	TBA	Boeing 777-31H	29064	FV Aircraft Leasing (Ireland) No.1 Ltd, (stored at Sharjah, United Arab Emirates)
2-STEJ	TBA	Airbus A330-322	209	Aer Cap Dutch Aircraft Leasing IV B.V. (stored at Tarbes-Lourdes, France)
2-WMAN	TBA	Aérospatiale SA341G Gazelle Srs.1	1277	J Wightman, (Ballynahinch, Co. Down, Northern Ireland)

## CANCELLATIONS

REG'N	TYPE	C/N	REASON
G-ANCX	de Havilland DH.82A Tiger Moth	83719	To Belgium
G-ARJT	Piper PA-23-160 Apache G	23-1961	Cancelled by CAA (CoFA expired 18.07.07. Last noted stored at Netherthorpe 08.17)
G-AXHC	Stampe SV.4C	293	To Iceland
G-BFKF	Reims Cessna FA152 Aerobat	0337	Cancelled as Permanently WFU (blown over by downwash of departing helicopter while parked at Conington 21.03.14)
G-BKAS	Piper PA-38-112 Tomhawk	38-79A1075	Cancelled by CAA (CoFA expired 23.05.13. Last noted stored at Cranfield 09.17)
G-BSIO	Cameron Furness Building-56	2310	Cancelled by CAA (but restored again later in the month)
G-BWAJ	Cameron V-77	3579	Cancelled by CAA (CoFA expired 07.07.17)
G-BYBE	Jodel D120A	269	Cancelled by CAA (damaged in a ground-loop at MOD St Athan 13.05.17)
G-BYPJ	Pegasus Quantum 15	7565	Cancelled by CAA (Permit to Fly expired 23.08.17)
G-BYUA	Grob G.115E	82086/E	To Finnish Air Force
G-BYVJ	Grob G.115E	82120/E	To Finnish Air Force
G-BYVX	Grob G.115E	82133/E	To Finnish Air Force
G-BYWE	Grob G.115E	82143/E	To Finnish Air Force
G-BYWT	Grob G.115E	82154/E	To Finnish Air Force
G-BZDJ	Cameron Z-105	4832	Cancelled as Permanently WFU (CoFA expired 02.07.16)
G-CCEO	Thunder AX10-180 s2	4634	Cancelled as Permanently WFU (CoFA expired 28.01.16. Was based in Austria)
G-CCWH	Dyn'Aero MCR-01	PFA 301-13949	Cancelled by CAA (Permit to Fly Expired 17.07.16)



**New on the British register, Dassault Falcon 7X G-CRNS (previously HB-JSA), is pictured at London Luton Airport on October 27.** Paul K Ferry / Apron Media

G-CELK	Boeing 737-330	23530	Cancelled as Permanently WFU (flown to Cotswold Airport 20.10.17 for parting out)
G-CFAC	BAe Avro RJ100	E3379	Re-registered as G-ILLR
G-CGGL	AutoGyro MTOSport	RSUK/MTOS/015	Cancelled as Destroyed (crashed on take-off at Kirkbride, Cumbria 31.03.12)
G-CHGI	Beech A36 Bonanza	E-1784	Cancelled to France (but restored again later in the month)
G-CHUI	Cessna 560XLS Citation XLS+	560-6139	To Germany
G-CHUL	Schempp-Hirth Cirrus	V3	Cancelled as Destroyed (details unknown)
G-CHVT	Schempp-Hirth Ventus 2B	37	To France
G-CIBG	Rolladen-Schneider LS4	4454	Cancelled as Destroyed (details unknown)
G-CJUG	Airbus Helicopters EC135T3	2001	To Ministry of Defence as ZM504
G-CJKC	BAe Avro RJ100	E3340	Cancelled as Permanently WFU (last noted stored at Cranfield 08.17)
G-CKEU	Airbus Helicopters EC135T3	2023	To Ministry of Defence as ZM519
G-CKEW	Airbus Helicopters EC135T3	2024	To Ministry of Defence as ZM520
G-CKII	Sikorsky S-92A	920259	To Republic of Ireland as EI-ICS
G-CKIK	Airbus Helicopters EC135T3	2025	To Ministry of Defence as ZM521
G-CKJU	Airbus Helicopters EC135T3	2028	To Ministry of Defence as ZM524
G-CKJW	Airbus Helicopters EC135T3	2027	To Ministry of Defence as ZM523
G-CKKA	BAe Avro RJ100	E3315	Cancelled as Permanently WFU (flown to Norwich 01.06.17)
G-CKLU	Lindstrand LTL Series 1-425	054	To Myanmar
G-CLJK	PZL-Bielsko SZD-51-1 Junior	B-1999	Cancelled as destroyed (mid-air collision with Cessna 150L G-CSFC over Lubenham 04.12.16)
G-DEHY	Slingsby T.65D Vega	1941	To Portugal
G-EEWS	Cessna T210N	210-64341	Re-registered as G-WYLD
G-EOMP	Piper PA-28-181 Archer II	28-7890124	To Netherlands

## PREVIOUS IDENTITIES

REG'N	P.I.	REG'N	P.I.
G-AWHH	ex N6036	G-VZSD	ex VZ345
G-BEVG	ex (D-....)	G-WYLD	ex G-EEWS
G-CDLB	ex (XA-....)	G-XPTV	ex A6-FLL
G-CHGI	ex (F-....)	G-ZZOT	ex N199PS
G-CJXH	ex PR-LTE	EI-FPS	ex C-GZWW
G-CKEW	ex D-HCBD	EI-GCY	ex D-ABFB
G-CKIM	ex D-HCBE	EI-ICS	ex G-CKII
G-CKJU	ex D-HECK	EI-SLZ	ex HB-AFW
G-CKPF	ex D-EJSW	EI-STJ	ex N788AS
G-CKPS	ex F-HBYD	EI-ZEU	ex G-ZEUI
G-CKRG	ex C-FXQJ	M-AGMA	ex N101RE
G-CKSG	ex OO-DWC	M-AKAL	ex 2-NITE
G-CLUV	ex D-1550	M-DSUN	ex N758JF
G-CRNS	ex HB-JSA	M-MBLY	ex C-FPSF
G-DIGZ	ex G-MCDD	M-ORAD	ex M-ORAT
D-ELUX	ex D-4269	M-SETT	ex C-FRYO
G-FAZT	ex PH-DUC	M-SURE	ex F-HPVE
G-FLEW	ex A6-LEW	M-YGIL	ex N600AK
G-FLYK	ex D-IKOB	2-AERD	ex VN-A371
G-ILLR	ex G-CFAC	2-ALOU	ex G-CICS
G-IROE	ex G-KVAN	2-AVCO	ex N129WF
G-LFVC	ex N5TF	2-AVIT	ex XA-VIT
G-MRLZ	ex OK-00K	2-CFML	ex JA205J
G-NJCZ	ex HB-WYO	2-GFKZ	ex JA03RJ
G-OHZO	ex N119WP	2-PDPD	ex G-PSHR
G-RKBD	ex JY-YYY	2-PJBA	ex HA-PJB
G-SUTE	ex OE-AJL	2-RLAU	ex A6-EMU
G-TCAE	ex OO-TCW	2-STEJ	ex HS-TEJ
G-TULA	ex D-EEKU	2-WMAN	ex HA-LFJ



G-EZPH	Airbus A320-214	7093	To Austria as OE-IVB
G-EZPR	Airbus A320-214	7372	To Austria as OE-IVC
G-FLEX	Mainair Pegasus Quik	7953	Cancelled as Permanently WFU (Permit to Fly expired 06.06.17)
G-HRLK	SAAB 91D Safir	91-376	To Germany (reserved as D-EAJA)
G-IROE	Flight Design CTSW	8334	Re-registered as G-KVAN
G-JECF	Bombardier Dash 8-Q402	4095	To Canada as C-FXIG
G-JMJR	Cameron Z-90	10611	Cancelled as Permanently WFU (CoFA expired 28.01.17. Was based in France)
G-KLNR	Hawker 400XP	RK-552	To Czech Republic as OK-ZUB
G-LSMB	Dassault Falcon 2000EX	047	To USA
G-MAVI	Robinson R22 Beta	0960	Cancelled by CAA (CoFA expired 22.07.14. Last noted stored at Wellesbourne Mountford 11.16)
G-MCDD	Hughes 369D	1111D	Re-registered as G-DIGZ
G-MNGD	Solar Wings Typhoon/Tri-Pacer	T681171	Cancelled as Permanently WFU (SSDR microlight so no Permit to Fly required)
G-MNYW	Solar Wings Pegasus XL-R	SW-WA-1094	Cancelled by CAA (Permit to Fly expired 07.08.98)
G-MTPJ	Solar Wings Pegasus XL-R	SW-WA-1265	Cancelled by CAA (Permit to Fly expired 09.06.08)
G-MTZW	Mainair Gemini Flash IIA	651-688-6-W441	Cancelled by CAA (Permit to Fly expired 02.07.18)
G-MVMO	Mainair Gemini Flash IIA	715-1288-6-W507	Cancelled by CAA (Permit to Fly expired 28.08.10)
G-MWBK	Solar Wings Pegasus XL-Q	SW-WQ-0271	Cancelled as Permanently WFU (Permit to Fly expired 27.07.15)
G-MWLB	Medway Hybred 44XLR	ME104/93	Cancelled as Permanently WFU (Permit to Fly expired 23.10.14)
G-MYJS	Solar Wings Pegasus Quasar IITC	6581	Cancelled as Permanently WFU (Permit to Fly expired 25.05.16)
G-OAMI	Bell 206B JetRanger II	464	Cancelled as Permanently WFU (CoFA expired 07.03.16. Heavy landing in a field near Wycombe Air Park 10.12.16)
G-OGAZ	Aérospatiale SA341G Gazelle	1274	To USA
G-ONPA	Piper PA-31-350 Navajo Chieftain	31-7952110	To San Marino
G-PERT	Airbus Helicopters EC130T2	8098	To Switzerland as HB-ZVD
G-SAFR	SAAB 91D Safir	91-382	To Germany (reserved as D-EHPT)
G-SBAP	Rans S.6-ES Coyote II	LAA 204-14991	Cancelled by CAA (crashed at Belle Vue Farm, Yarnscombe, Devon 07.05.17 after stalling on take-off)
G-SOAR	Eiri PIK-20E	20214	To Germany
G-SYNA	Embraer EMB-135BJ Legacy 650	14501127	To Mexico
G-TABB	Schempp-Hirth Ventus 2cT	227	Cancelled as Permanently WFU (crashed at Val des Prés, Haut-Alpes, France 14.07.17)
G-TAWM	Boeing 737-8K5	37249	To Canada as C-GQWM
G-UHGB	Bell 205A-1	30291	To USA as N35EH
G-WACL	Reims Cessna F172N	1912	Cancelled as Permanently WFU (CoFA expired 18.10.17, was based in France)
G-WNSH	Sikorsky S-92A	920060	To Norway as LN-QQO
G-ZEUI	Cessna 525A CitationJet CJ2	525A0202	To Republic of Ireland as EI-ZEU
EI-DSB	Airbus A320-216	2132	To USA as N271NV
EI-FDA	Airbus A319-112	1618	To Moldova as ER-00002
EI-GCM	Boeing 737-8KN	40233	To India as VT-JTH
EI-LEM	SOCATA TB-9 Tampico	1384	To France
EI-RJG	BAe Avro RJ85	E2344	Cancelled as WFU (heavy landing at Florence Peretola, Italy 23.03.16 and subsequently parted out)
EI-SLH	ATR 72-202	157	Cancelled as WFU (flown to Durham Tees Valley 21.07.17 for parting out)
M-ABEG	ATR 72-202	483	To Dominican Republic
M-ABJB	Embraer 190	19000167	To Tanzania as 5H-FJH
M-ABJD	Embraer 190	19000175	To Tanzania as 5H-FJI
M-ABKV	Embraer 190	19000110	To Mexico
M-ABLA	Boeing 737-86N	36813	To India
M-EANS	Bombardier Challenger 300	20017	To USA as N159WH
M-ORAT	Dassault Falcon 7X	147	Re-registered as M-ORAD
M-ROWL	Dassault Falcon 900EX	217	To USA as N512KS
M-VNTR	Daher TB-900	1097	Cancelled as dismantled (crashed in a field on approach to Fair Oaks 15.10.16 after a flight from Ronaldsway)
2-ADET	Airbus A319-112	1601	Cancelled as dismantled (flown to Pinal Air Park, Marana, Arizona 04.11.16 for storage and now parted out)
2-CAUM	Bombardier Dash 8-Q402	4020	To USA as N74WA
2-NITE	Bombardier Challenger 604	5520	To Isle of Man as M-AKAL
ZJ-HLH	Eurocopter EC135P2	0193	To Malta

Key: NB – Nominal Base

A place name in brackets relates to the owner's address as where the aircraft is based is unknown.

## UPDATES & CORRECTIONS

REG'N	DETAILS
G-ATOM	Became HA-BAM 07.17
G-BMUD	Became LZ-APV 10.07.17
G-BOCG	Became N147BZ 20.10.17
G-BOUL	Became N23UZ 25.10.17
G-BOWR	Became N109WE 20.10.17
G-BTJC	Type officially changed to a Luscombe 8F (modified) 13.10.17
G-BYPT	Became ZK-TPC 03.10.17
G-CCID	Type officially changed to a Jabiru J430 19.09.17
G-CCWU	Type officially changed to a Skyranger Swift 912(1) 21.09.17
G-CFZA	Became SP-4003 27.06.17
G-CGRO	Became F-HSAR 12.10.17
G-CHIO	Became OK-0015 06.17
G-CHYV	Became VH-OIX 10.10.17
G-CHZF	Became VH-OIZ 04.10.17
2-CICS	Became 2-ALOU (cancelled as sold in Hungary 26.05.17)
G-CITM	Manufacturer officially changed to K Smith & J Colton 6.10.17
G-CIYI	Became N15CK 18.10.17
G-CJDT	Became D-4776 23.06.17
G-CJGP	Type officially changed to a Breezer M400 26.10.17
G-CJHD	Became EI-GMO 14.09.17
G-CJIF	Became LN-OID 27.03.17
G-CJIN	Type officially changed to a Boeing A75L300 09.10.17
G-CJSJ	Became D-5207 23.05.17
G-DAWZ	Became OH-1023 13.06.16
G-DORS	Type officially changed to an EC135T3 20.09.17
G-EYAS	Became U-Y26 (Thai ULM register) 02.17
G-GFCM	Became HA-BEN 07.17
G-HAMM	Became LN-SFA 25.07.17
G-HYLL	Became 40-HCG 04.07.17
G-JYAK	Became N11YK 28.09.17
G-LIDY	Became D-7627 01.06.17
G-MAYO	Became TU-GAD 03.10
G-MYWT	Became LZ-MYW 07.08.17
G-MZFM	Type reverted to a Pegasus Quantum 15 (i.e. no longer an SSDR) 28.09.17
G-OLFE	Type officially changed to a Mystere-Falcon 20ES 10.10.17
G-OVIA	Became VH-VUM 19.10.17
G-OVPM	Type officially changed to a Europa NG 10.10.17
G-PHNM	Became F-HLRZ 16.10.17
G-PSHR	Became 2-PDPD 05.10.17
G-RAFR	Type officially changed to a Skyranger 912S(1) 08.09.17
G-RECE	Actually became LZ-REC (corrects page 76, November 2017)
G-ROYN	Became SE-JTL 19.09.17
G-RRVV	Became N97VV 09.08.17
G-WCKD	Became HB-ZTR 02.10.17
G-WOCO	Became D-EWRP 05.07.17
G-WPAS	Became LX-HSR 09.17
G-XYAK	Became N52XY 27.10.17
G-ZBJI	Type is a Boeing 787-8 (corrects page 71, December 2017 issue)
G-ZENA	Manufacturer officially changed to AN Aston and E Bentley 25.10.17
G-ZOMB	Constructors number officially changed to 1706-7506 15.09.17
EI-DKI	Became VH-RZD 10.17
EI-FNP	Became ZS-ADJ 28.07.17
EI-SLK	Became ZS-XCM 13.06.17
M-MDMH	Became D-CLAV 29.08.17
M-PRVT	Became P4-TEN 08.17
M-TEAM	Became N609CJ 13.11.17
2-SKAD	Became PK-PAH 18.08.17



**Hawker 400XP, G-KLNR, is now registered in the Czech Republic as OK-ZUB.** AirTeamImages.com/Steve Flint





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# THAI A350 DELIVERY

Meticulous detail goes into manufacturing an airliner and there is no less attention to tiny details when it comes to delivering the finished product, as **Martyn Cartledge** discovered when joining the handover of Thai Airways' fifth A350 XWB.

**A**irbus delivered 688 new aircraft to its customers in 2016 – nearly two for every day of the year. Airbus A350-900 HS-THF came off the Toulouse Final Assembly Line (FAL) and made its first flight on June 22 last year (2017). It is the fifth of 12 A350-900s the airline is due to receive. The first example to be delivered was HS-THB on August 31, 2016. On July 7, HS-THF was passed to a dedicated, multi-disciplinary Airbus team that includes managers from for the ferry flight, sales contract, conformity, airworthiness, customer coordination and delivery transaction.

Once the handover date is confirmed, Airbus media relations and events teams swing into action about a month before the 'big day' if it is a significant delivery.

They liaise with counterparts at the airline

to organise a celebration, that sets out to highlight the importance of the delivery. The first delivery to a customer, or a new type to an existing customer, will usually have the greatest coverage and is likely to attract extra media attention and more senior VIPs from both the manufacturer and the carrier.

The teams will finalise the guest lists from Airbus, the airline, engine manufacturer and members of the press. Different programmes are arranged for the media and VIPs, according to their needs and are likely to include press briefings on the aircraft concerned, as well as a visit to the FAL and mock-up centre.

An on-the-day event is arranged when the aircraft or order is considered to be significant. It will be tailored to meet the traditions, needs or ethical stance of the airline and the country where it is based.

Airbus has delivery centres in Hamburg, Germany; Tianjin, China; Mobile, Alabama in the USA, and France where the Thai aircraft was dispatched from the Henri Ziegler Delivery Centre at Toulouse Blagnac.

This building features an iconic semi-circular stand that provides guests with an excellent view of the aircraft from the walkway that surrounds it, and is directly accessible from the main hall.

While Airbus was implementing its meticulous plan for the aircraft, the new operator was also making detailed arrangements to take it onto its roster. Thai Airways put together a group of specialists from maintenance, finance, and legal departments, as well as flight operations.

A test pilot and engineer, along with other specialists worked on Thai's part of the process in Toulouse.





## INITIAL INSPECTIONS

The technical and ultimately legal part of the delivery process normally takes around five days for an A350 XWB. Airlines often have an internal meeting prior to the 'official' start of the process at which the flight operations and maintenance inspection teams review the overall information regarding the status of new aircraft to be delivered. Thai is one of those airlines and the meeting involved one of its experienced aircraft inspectors who had monitored the whole process of the aircraft's journey from assembly to the completion of last flight test by Airbus.

The following day officially becomes 'day one' of the delivery process, and the actual physical work of accepting this shiny new widebody jet begins in earnest. The basic procedure is always the same, although

Above: **The new Thai Airways Airbus waits outside the distinctive delivery centre at Toulouse.**

Main photo: **Aircraft HS-THF performing a go-around as part of its initial test flight on June 22, 2017.** Benoit Machefert

some airlines will make small variations.

The process for HS-THF started with a welcome meeting between the Thai acceptance team and the Airbus delivery team, enabling everybody to get to know each other and their roles. They all received a status report on the aircraft following its hand-over from final assembly/flight test.

Any known issues in the process of being resolved and any others that do not warrant delaying the delivery process, are mentioned at this stage.

The first physical checks of the aircraft follow. The Thai team, along with Airbus

staff, performs a ground check and engine run-up. At this stage, all the aircraft systems are tested in the cockpit.

While this is going on up front, a joint team from the airline and manufacturer examine all the cabin systems, including in-flight entertainment (IFE), the connectivity system, galley equipment, lavatories, seats and emergency kit.

Externally the aircraft is also being checked by both Airbus and Thai staff. Flight control surfaces, the landing gear, engines and auxiliary power unit (APU) are included in this process.

Any snags or discrepancies discovered by any members of the Thai team during these three separate inspections will be entered into a logbook for further investigation and, if necessary, corrective actions by Airbus.



## ACCEPTANCE FLIGHT

A customer acceptance flight is made on the second day, subject to the weather, air traffic control conditions and assuming any snags identified earlier do not affect the safety of the aircraft.

This flight is performed to demonstrate that all aircraft systems are working properly and have been tested in accordance with an agreed profile.

Thai's test pilot will fly the aircraft from the captain's left seat and the Airbus test pilot will be in the right seat. An Airbus flight test engineer will sit in the first observer seat and his Thai counterpart in the second.

They have all attended a pre-flight briefing, at which they determine what tests will be performed and at what level.

A typical flight test profile will include a vast array of operations performed at different altitudes and will include monitoring engine parameters such as auto thrust and take-off/go-around mode (TOGA) and operation at high and low speeds.

The auto pilot, navigation systems and weather radar will be checked between FL200 and FL300. Higher up, the APU will be started and the aircraft will be put through a series of attitude tests.

All aircraft systems limitations will be demonstrated, including flight envelope protection.

The oxygen masks will be deployed to ensure the aircraft is safe to operate with passengers on board as part of cabin leakage and depressurisation tests. However, the oxygen mask system will have been put into test mode so only the door to the stowage area will open, while the masks remain in place.

During the descent, the speed brakes will be tested at around FL240. When 10,000ft further down, a low-speed recovery will be performed, the landing gear is deployed and the time taken checked; all culminating in a simulated go-around. The flight finishes with a full CAT 3 dual autoland and roll-out.

All the time the flight crew is undertaking its tests, the cabin teams will be working on more than 450 different checks, even down to the operation of the ovens and coffee machines.

Fault messages are recorded in a post-flight report. Any requirement for another flight will be decided at the post-customer acceptance flight meeting. This depends on the status of the aircraft after the first flight, any fault messages and corrective actions that might be needed. Day three is taken up with the search for, and the implementation of, solutions for any problems detected during the first two days. Certain non-safety issues can be made good at the customer's base, if required, so as not to delay the whole process.

If all is well at this stage, the fourth day is about what is termed 'technical acceptance', meaning the creation and acceptance of official documentation for the aircraft. This is when the technical teams have to agree that the aircraft conforms to its definition, that it is the approved standard design, and that any optional modifications requested by the



The Thai Airways delegation headed by Usanee Sangsingkeo (centre, right), Acting President of Thai Airways, with Andrea Debbane, (centre, left) Executive Director of the Airbus Foundation.



Ready to go: Thai Airways' fifth A350 XWB awaiting its first passengers at the Henri Ziegler Delivery Centre's main parking stand in Toulouse. All photographs by the author, unless stated



There are two dedicated check-in desks in the main foyer of the delivery centre – checking in for flight THA8907 was a relaxed but efficient affair.

customer, comply with European Aviation Safety Agency (EASA) regulations. When all these are in place the aircraft can be awarded its airworthiness certificate.

The following day, the process of legally transferring the ownership of the aircraft will begin. Payment of the final balance is made in US dollars. Airbus then releases the Bill of Sale and the aircraft is the customer's. This

is known as Transfer of Title and in the case of 'THF', it involves the Civil Aviation Authority of Thailand. Certificates of Airworthiness and Registration are also issued.

Once all these are completed, the aircraft is ready to make the 6,033 mile (9,709km) trip from Toulouse to Bangkok. The legal processes for 'our' aircraft were completed at 2315hrs on July 13, 2017.





Donated school supply kits are loaded into HS-THF ready for delivery to underprivileged children in Thailand.



There are 32 lie-flat seats in Thai's Royal silk class.



The colourful and distinctive economy cabin on Thai Airways' latest A350 XWB. The carrier says the design touches help make every flight "soothing and relaxing".

## DELIVERY DAY

July 14, 2017 arrives and the final preparations are being made for the flight at 1900hrs. Having had a presentation on the A350 XWB and a visit to the FAL the previous day, the VIPs from Thailand, the small media group and Thai personnel are transferred to the Henri Ziegler Delivery Centre. The check-in procedure is carried

out in exactly the same way as you would find at any commercial airport, although in a rather more relaxed style given the small number of passengers travelling on this 321-seat aircraft.

As this is a 'goodwill flight' (see panel), a cocktail reception is hosted by the Executive Director of the Airbus Foundation, Andrea Debbane, and the details of the journey are

outlined by both Airbus and Thai's Acting President Usanee Sangsingkeo. This was followed by a photo opportunity around the aircraft involving Airbus Foundation and Thai personnel, now joined by the flight crew.

Boarding the aircraft is again a relaxed affair, though of course adhering to all the relevant security protocols and checks. There was no priority boarding as the 30 or so passengers all flew in Thai's Royal Silk class.

Once on board you notice the unmistakable 'new car smell' or in this case, the 'new aircraft smell'. The IFE handsets still have the protective film on them.

The aircraft pushes back from the delivery centre on the southwest side of the airport at 1856hrs CET and a few minutes later heads towards Runway 32L.

Even though this was not a standard, commercial flight, all the important safety demonstrations and procedures were completed. The aircraft lined up on 32L and at 1910hrs 'Hotel Foxtrot' became airborne at the start of the 11-hour flight to Bangkok.

Even though this is the fifth A350 XWB for Thai, there was still a celebratory mood. The Acting President of Thai Airways, Usanee Sangsingkeo, took on the role of flight attendant and served the passengers canapés and Champagne before raising a toast to the new aircraft.

While the guests were enjoying themselves, the serious business of double checking the interior systems continued.

The six cabin crew, in addition to the task of looking after the passengers, were double checking interior systems.

There will be further changes when the aircraft reaches home, not least to the IFE which was not yet fully functional. And the

## GOODWILL FLIGHT

The delivery of this particular A350 XWB, although not significant in itself, had an added element in that it provided an opportunity for the Airbus Foundation and Thai Airways to organise what the manufacturer calls a 'goodwill flight'. The foundation, in conjunction with Aviation Without Borders and the International School of Toulouse, had donated a consignment of 1,000 school supplies kits, comprising backpacks and classroom stationery. The gifts were for underprivileged children in the three most southern provinces of the country that have been affected by conflict in the region. The cargo had been pre-loaded aboard the aircraft the day before, so it wouldn't delay anything on delivery day itself. This was the fifth goodwill flight organised by the foundation and Thai. Previous initiatives have involved both A330 and A380 aircraft.

The Airbus Foundation is chaired by the manufacturer's CEO Tom Enders. The company sets out to use its resources to drive innovation and support humanitarian relief around the globe. It can respond to needs as they arise. In addition, it hopes to both inspire and prepare young people for the challenges of what the future might bring. Since its launch in December 2008, the foundation has facilitated more than 55 relief or goodwill flights to numerous destinations carrying 700 tonnes of aid in the process.





Above: **Captain Theva Thaisantad and First Officer Patcharapol Nuchprayool. Another Captain and First Officer were on the aircraft – all four are line crew with added delivery responsibilities.**

Below: **HS-THF, Thai's fifth A350-900, sits in the Toulouse sunshine ready for departure.**



economy cabins will need headrest covers, safety cards and such like.

Quite soon things settle down into what might be termed a more 'normal' flight. An evening meal is served and about five hours after take-off, most passengers settled down to get some rest.

After breakfast we began the descent into Bangkok's Suvarnabhumi Airport and at 1113hrs local time (0613hrs CET) the aircraft was home.

This being Thai's fifth A350 XWB, nothing special had been arranged for our arrival. More prestigious deliveries would warrant a special event, perhaps with the customary water arch from the airport's fire service, a welcoming committee of local dignitaries and some celebrations provided by traditional dance or performance groups.

Each aircraft delivery is a special event with its own specific content. Underpinning it all is a system designed to ensure a safe aircraft, ready to transport passengers around the globe. **AN**

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\*UK scheduled on sale date. Please note that the overseas deliveries are likely to be after this date.



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